VOLUME IV, APPENDIX I

ENERGY ENGINEERING ANALYSIS PROGRAM STUDY FORT LEONARD WOOD, MISSOURI

Prepared for

KANSAS CITY DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI

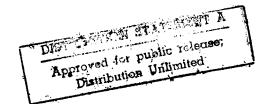
DTIC QUALITY INSPECTED 2

Under

CONTRACT NO. DACA41-92-C-0098

December 1993

EMC No. 3204-000



E M C ENGINEERS, INC. 9755 Dogwood Road Suite 220

Roswell, Georgia 30075 Phone (404) 642-1864

TABLE OF CONTENTS

Section	<u>on</u>		Page
EXEC	UTIVE	SUMMARY	ES-1
1.0	INTR	ODUCTION	
	1.1 1.2 1.3 1.4 1.5	Authority for Energy Engineering Analysis Program Study Purpose of Energy Engineering Analysis Program Study Scope of Work Approach Work Accomplished	1-1 1-1 1-2
2.0	FACII	LITY DATA	
	2.1 2.2 2.3 2.4	General Buildings Included in Analysis Energy Sources 2.3.1 Electricity 2.3.1.1 Electrical Demand Charges 2.3.1.2 Electrical Energy Charges 2.3.2 No. 2 Fuel Oil 2.3.3 No. 6 Fuel Oil 2.3.4 Liquified Petroleum Gas Energy Consumption Analysis 2.4.1 Electricity 2.4.2 No. 2 Fuel Oil 2.4.3 No. 6 Fuel Oil 2.4.4 Liquified Petroleum Gas Existing Controls, EMCS, and Other Automation Systems 2.5.1 Existing Controls 2.5.2 HSQ Technology EMCS 2.5.3 Other Automation systems	2-1 2-14 2-14 2-14 2-14 2-15 2-15 2-15 2-17 2-19 2-21 2-23 2-23 2-23
3.0	ENER	GY MONITORING AND CONTROL SYSTEM APPLICATION	
	3.1 3.2	Energy Conserving EMCS Functions	3-1 3-1

TABLE OF CONTENTS (continued)

<u>Secti</u>	<u>on</u>		<u>Page</u>
4.0	ENE	RGY MONITORING AND CONTROL SYSTEM REQUIREMENTS	
	4.1	General	4-1
	4.2	Configurations	4-1
	4.3	Data Transmission Media	4-2
	4.4	Sensor and Actuators	4-4
	4.5	EMCS Operations and Maintenance	
		4.5.1 EMCS Operations	4-4
		4.5.2 EMCS Maintenance	4-4
	4.6	Authority	4-5 4-5
	4.7	Repair of Existing Controls	4-5
5.0	ANA	LYSIS METHODOLOGY	
	5.1	Procedures	5-1
	5.2	I/O Summary Tables	5-2
	5.3	Energy Savings	5-2
	5.4	Construction Costs	5-3
	5.5	EMCS Prioritization	5-3
	5.6	EMCS Alternatives Evaluation	5-3
6.0	RESU	ULTS OF ANALYSIS	
	6.1	General	6-1
	6.2	Building Summary	6-1
	6.3	Resulting Configuration	6-1
	6.4	Energy Savings	6-15
	6.5	Implementation Costs	6-16
	6.6	Economic Summary	6-17
	6.7	Life Cycle Cost Analysis	6-18
7.0	REC	OMMENDATIONS AND CONCLUSIONS	
	7.1	Conclusions	7-1
	7.2	Recommendations	7-1

LIST OF TABLES

<u>Table</u>		<u>Page</u>
ES ES ES 2-1 2-2 2-3 2-4 2-5 2-6 6-1 6-2 6-3	Identical Buildings Energy Savings Summary Energy Cost Savings Summary Buildings Evaluated for EMCS Identical Buildings Groups of Similar Buildings Utility Buildings Electrical Consumption-FY92 No. 2 Fuel Oil Consumption-FY92 No. 6 fuel Oil Consumption-FY92 LPG Consumption-FY92 Building Economic Summary, Alternative 1 Building Economic Summary, Alternatives 2 and 3 Energy Savings Summary Implementation Costs	ES-5 ES-6 ES-6 2-2 . 2-11 . 2-12 . 2-13 . 2-15 . 2-17 . 2-19 . 6-2 . 6-7 . 6-15 . 6-16 . 6-17 . 6-20
	LIST OF FIGURES	
<u>Figure</u>		<u>Page</u>
2-1 2-2 2-3 2-4 2-5 6-1 6-2 6-3	No. 6 Fuel Oil Consumption - FY92 LPG Consumption - FY92 HSQ EMCS EMCS Configuration, Alternative 1 EMCS Configuration, Alternative 2	. 2-18 . 2-20 . 2-22 . 2-25 . 6-12 . 6-13

APPENDICES

Volume I

- A STATEMENT OF WORK
- B EMCS APPLICATIONS PROGRAMS
- C I/O SUMMARY TABLES
- D ALGORITHMS AND ENERGY CONSTANTS USED IN ANALYSIS
- E HVAC SYSTEM ECONOMIC SUMMARY

PREVIOUSLY SUBMITTED

Volume II

F ENERGY CALCULATIONS

Volume III

- G COST ESTIMATES
- H FIELD SURVEY NOTES

Volume IV

I COMPUTER SIMULATIONS

LIST OF ABBREVIATIONS

AC - air conditioning

ACC - anticipated contract cost

ACCU - air cooled condensing unit

ACM - asbestos containing material

ACU(s) - auxiliary control unit(s)

AHU - air handling unit

AI - analog input

AO - analog output

ASCII - American Standard Code for Information Interchange

ASHRAE - American Society of Heating, Refrigeration, and Air conditioning

Engineers

B/C - benefit-to-cost ratio

BCD - binary coded decimal

BLDG - building

BEACON - Building Energy Simulation Program

Btu - British thermal units

Btuh - British thermal units per hour

B/W - black and white

C - Celsius

CCC - central communications controller

ccf - one hundred (100) cubic feet

CCU - central control unit

cf - cubic foot, cubic feet

cfm - cubic feet per minute

CLM - command line mnemonic

CLMI - command line mnemonic interpreter

COE - Corps of Engineers

COS - central operator station

CPU - central processing unit

CRT - cathode ray tube

CU(s) - control unit(s)

CWE - current working estimate

d - day(s)

DCP - duty cycle program

DEH - Directorate of Engineering and Housing

DHW - direct memory access

DI - digital input

DO - digital output

DOD - Department of Defense

DPW - Department of Public Works

DTM - data transmission media

DX - direct expansion

E/C - energy-to-cost ratio

ECIP - Energy Conservation Investment Program

ECO - energy conservation opportunity

EEAP - energy engineering analysis program

eff - efficiency

elec. - electricity

EMC - EMC Engineers, Inc.

EMCS - energy monitoring and control system

EMI - electromagnetic interference

ESCO - energy service company

F - Fahrenheit

FO - fiber optic(s)

ft - foot, feet

ft² - square feet

FY - fiscal year

gal - gallon(s)

hp - horsepower

hr - hours(s)

H & V - heating and ventilating

HVAC - heating, ventilation, and air conditioning

in. - inch(es)

I/O - input/output

kBtu - one thousand British thermal units

kcf - one thousand cubic feet

klb - one thousand pounds

kva - kilovolt - ampere

kW - kilowatt, one thousand watts

kWh - kilowatt-hour, one thousand watt-hours

1b - pound(s)

LCCA - life cycle cost analysis

LED - light emitting diode

LPG - liquified petroleum gas

MAU - make-up air unit

MBtu - one million Btu

MCR - master control room

MHz - megahertz

Mh - man-hours(s)

mo - months(s)

MW - megawatt, one million watts

MWh - megawatt-hour, one million watt-hours

MZAHU - Multizone air handling unit

NA - Not active or Not applicable

NG - natural gas

NOAA - National Oceanic and Atmospheric Administration

no. - number

OA - outside air

O&M - operation and maintenance

PM - preventative maintenance

PROM - programmable read-only memory

psi(a)(g) - pounds per square inch (absolute) (gage)

RAM - random access memory

RCU(s) - remote control unit(s)

RTC - real-time clock

RTDOS/E - real-time disk operating system /executive

S&A - Supervision and Administration

scfm - sea-level cubic feet per minute

SES - shared energy savings

SIOH - supervision, inspection, and overhead

SIR - savings-to-investment ratio

SPW - single present worth

sq.ft. - square feet

st/sp - start/stop

stm - steam

SZAHU - single zone air handling unit

t - ton

temp - temperature

TRY - test reference year

UA - overall heat transfer coefficient (Btu/hr/ft²/°F)

UCU(s) - unitary control unit(s)

UH - unit heater

UPW - uniform present worth

VAV - variable air volume

wk - week(s)

yr - year(s)

APPENDIX I COMPUTER SIMULATIONS

INTRODUCTION

Appendix I contains Computer Energy Simulation Data for fifteen representative buildings at Ft. Leonard Wood. Each representative building contains the following data:

- Energy Constant Calculation sheets
- Building Heating Load Calculation sheet
- Building Internal Load Calculation sheets (People, Lights, and Equipment)
- Computer Energy Simulations from BEACON and TRACE energy computer programs

Sample computer simulation sheets on the following pages show how building energy use is extracted from the output reports of BEACON and TRACE.

BEACON Energy Analysis By Energy Systems Engineers, Inc.

625.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	118.32	.00	3.32	8.23	1.24	22.94	12.6
FEB	93.14	.00	2.95	7.32	1.12	20.46	12.6
MAR	75.69	.07	3.26	8.08	1.24	22.60	20.5
APR	31.91	.78	3.14	7.77	1.20	21.77	23.5
MAY	4.71	1.85	3.32	8.23	1.24	22.94	26.4
JUN	.00	4.38	3.14	7.77	1.20	21.77	31.1
JUL	.00	6.22	3.26	8.08	1.24	22.60	33.0
AUG	.00	5.79	3.32	8.23	1.24	22.94	31.2
SEP	7.24	3.17	3.08	7.62	1.20	21.42	29.9
OCT	29.24	.63	3.32	8.23	1.24	22.94	25.6
NOV	62.66	.10	3.20	7.93	1.20	22.11	21.9
DEC	117.71	.00	3.20	7.93	1.24	22.25	12.6
YEAR	540.62	22.97	38.54	95.41	14.55	266.75	33.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 154544. BTU/(SQFT-YEAR)

- Total Heating energy use for Oct. through April is 528.7 MBtus. 528.7 MBtus is entered into the Energy Constant Calculation Sheet under Heating (MBtu) - BASERUN.

- Total Cooling energy use for May through September is 21,410 kWh. 21,410 kWh is entered into the Energy Constant Calculation Sheet under Cooling (KWh) - BASERUN.

SAMPLE FROM TRACE COMPUTER SIMULATION

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

	W 0 M	m 13 T.	v	FWR	R G Y	С	ON	S	UM	PT	1	0	n	-

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	26,896	68	1,360	3
Feb	24,306	68	1,254	3
March	27,659	68	967	3
April	25,190	68	257	1
May	25,059	69	0	0
June	26,135	73	0	0
July	27,253	75	0	0
Aug	27,290	73	0	0
Sept	24,024	70	0	0
Oct	26,703	68	378	1
Nov	25,906	68	613	2
Dec	26,515	68	1,280	3
Total	312,936	75	6,109] 3

Building Energy Consumption = Source Energy Consumption =

94,977 (Btu/Sq Ft/Year) 217,655 (Btu/Sq Ft/Year) Floor Area = 17,677 (Sq Ft)

Total gas use for Oct, through April
6109 THERMS X 100,000 BTUS X 1 MBTU = 610.9 MBTUS
THERM X 1,000,000

610.9 MBTUs is entered into the Energy Constant Calculation sheet under Heating (MBTU) - BASERUN.

0.3

11,917

12.0

1,576

0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

SAMPLE FROM TRACE COMPUTER SIMULATION

Ref	Equip					Month	ily Consi	mption -				W	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	10041
0	LICHTS									****	9604	8950	9070	111,203
	ELEC	9337	8442	9872	8950	9604	9484	9070	9872	8950	32.2	32.2	32.2	32.2
	PK	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	
1	MISC LD							7564	7907	7394	7793	7394	7564	90,948
	ELEC	7678	6939	7907	7394	7793	7622	7564	24.1	24.1	24.1	24.1	24.1	24.1
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	2412			
2	MISC LD							0	0	0	o	0	0	0
	GAS	0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •		
3	MISC LD						_	•	0	0	0	0	o	0
	OIL	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••			
4	MISC LD								0	0	0	0	0	0
	P STEAM	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD							_	0	0	0	0	0	0
	P HOTH20	0	0	0	0	0	0	0	_	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
6	MISC LD								0	0	0	0	0	0
	b CHIFF	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••		
1	EQ1170S		AIR	-CLD CON	D COMP <					805	c	0	0	6,019
	EFEC	0	0	0	0	712	1253	1866	1384	5.6	0.0	0.0	0.0	8.1
	PK	0.0	0.0	0.0	0.0	5.3	6.9	6.1	6.9	3.6	0.0	0.0	•••	
1	EQ5200			idenser f					188	108	0	0	o	816
	ELEC	0	O	0	0	96	172	252	0.9	0.8	0.0	0.0	0.0	1.1
	PK	0.0	0.0	0.0	0.0	0.8	1.0	1.1	0.9	0.8	0.0			
:	1 EQ5313		con	TROLS							o	0	0	691
			_			114	125	195	158	99	U	U	•	1 /

125

2537

10.8

341

114

8.9

228

0

0 1783

0.0

0.0

0

AIR-CLD COND COMP <20 TONS

0

0.0

CONDENSER FANS

0 0

0

0

0

0

0.0

. 0

RLEC

2 EQ11708

2 EQ5200

ELEC

PK

195

3091

12.0

158

0.3

239

0

0

EQUIPMENT ENERGY CONSUMPTION------

Total energy use for chillers in this building is inside the marked box. Total KWh = 21,900 21,900 KWh is entered into the Energy Constant Calculation Sheet under Cooling (KWh).

0

0.0

SAMPLE FROM TRACE COMPUTER SIMULATION EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD 1.6 0.0 0.0 0.0 1.5 1.5 1.3 0.0 1.3 1.6 0.0 0.0 PK 0.0 CONTROLS 2 EQ5313 0 881 0 195 144 0 223 169 150 0 0 0 0 ELEC 0.3 0.0 0.0 0.0 0.3 0.3 0.3 0.3 0.0 0.3 0.0 0.0 PK 0.0 FC CENTRIF. FAN C.V. 1 EO4003 11,387 1611 1665 0 1665 0 0 0 0 1611 1665 1504 1665 BLEC 2.2 2.2 2.2 2.2 0.0 0.0 2.2 2.2 0.0 0.0 2.2 PK 2.2 2.2 FC CENTRIF. FAN C.V. 1 EQ4003 0 0 0 0 0 0 0 0 0 0 0 O 0 ELEC 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 0.0 PROPELLER FAN 2 EQ4381 1.638 135 139 139 135 139 135 139 139 135 139 ELEC 139 126 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 PROPELLER FAN 2 EQ4381 0 0 0 0 0 0 0 0 0 0 0 0 ELEC 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK FC CENTRIF. FAN C.V. 3 EO4003 19,605 1665 1665 1611 1611 1665 1665 1611 1665 1611 1665 1665 1504 ELEC 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 PK FC CENTRIF. FAN C.V. 3 EO4003 0 0 0 0 0 0 0 0 0 0 0 0 0 ELEC 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK FC CENTRIF. FAN C.V. EQ4003 1611 1665 11,387 1665 0 1611 0 0 0 0 1665 ELEC 1665 1504 2.2 0.0 0.0 2.2 2.2 2.2 0.0 0.0 0.0 2.2 2.2 PK 2.2 2.2 FC CENTRIF. FAN C.V. 4 EO4003 0 0 0 0 0 0 0 0 0 0 ٥ 0 0 ELEC 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK FC CENTRIF. FAN C.V. 5 EO4003 2775 2775 32,675 2686 2775 2775 2685 2775 2775 2686 2775 2507 2686 ELEC 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 PK 3.7 3.7 FC CENTRIF. FAN C.V. 5 EQ4003 0 0 0 0 0 0 0 0 n ELEC 0 0 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK GAS FIRE TUBE HOT WATER 1 EQ2001 6.109 0 378 613 1280 0 0 0 0 1360 1254 967 GAS 3.4 0.0 0.0 1.2 1.7 2.8 0.0 0.0 0.9 0.0 3.4 3.2 PK HEAT WATER CIRC. PUMP C.V. 1 EQ5020 6,865 1074 1110 0 0 0 786 0 0 1110 671 1110 1003 ELEC 1.5 1.5 1.5 1.5 0.0 1.5 0.0 0.0 0.0 0.0 1.5 PK 1.5 1.5

COMPUTER SIMULATIONS

BUILDING 625

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

05-Mar-93

DATE: BUILDING NO.:

625

BLDG. TYPE:

BATTALION HQ

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	528.7	347.3	323.7	323.7	487.0	510.3
COOLING (kWH)	21410	15280	13780	13620	21110	20540

SUPPLY AIR FAN	9430 CFM
FLOOR AREA	5795 FT ²
CFMI	435 CFM
UA	2216 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
50,25,110	(2 FOR HEAVY)

BEACON RUN DEFINITION:									
BASERUN	EXISTING OPERATION								
RUN1	NIGHT SETBACK								
RUN2	DDC CONTROL								
RUN3	ECONOMIZER								
RUN4	NIGHTIME INFILTRATION (OA)								
RUN5	DAYTIME INFILTRATION (OA)								

HOUSE OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS					
		1800	55 HR	HR. ON HEATING	1846 HR/YR			
M-F	700		8 HR	HR. ON COOLING	1237 HR/YR			
SAT.	800	1600		HR. OFF HEATING	2522 HR/YR			
SUN.	800	1600	8 HR		1691 HR/YR			
	TOTAL OCCL	IPY HR.	71 HR/WK	HR. OFF COOLING	חויחח ופסו			
	TOTAL UNOC	C. HR.	97 HR/WK					
		ANNUAL OCCUPY HR.						
	ANNUAL UNG		5058 HR/YR					

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 – 1846 = 2522 HR/YR HOUR SAVE (COOLING ONLY) 2928 – 1237 = 1691 HR/YR

HOAUHO	528.7 MBtu -	487 MBtu	=	1.90E+01 Btu/CFM-HR
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	435 CFM *	5058 HR/YR		
HOAUH	528.7 MBtu -	487 MBtu	=	3.80E+01 Btu/CFM-HR
	435 CFM *	2522 HR/YR		
COAUHC	21410 kWH -	21110 kWH	=	1.36E-04 kWH/CFM-HR
	435 CFM *	5058 HR/YR		
COAUC	21410 kWH -	21110 kWH	=	4.08E-04 kWH/CFM-HR
3 37,12 3	435 CFM *	1691 HR/YR		
HOAOHC	528.7 MBtu -	510.3 MBtu	=	1.14E+01 Btu/CFM-HR
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	435 CFM *	3702 HR/YR		
НОАОН	528.7 MBtu -	510.3 MBtu	=	2.29E+01 Btu/CFM-HR
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	435 CFM *	1846 HR/YR		
COAOHC		20540 kWH	=	5.40E-04 kWH/CFM-HR
00,101.15	435 CFM *	3702 HR/YR		
COAOC		20540 kWH	=	1.62E-03 kWH/CFM-HR
90,100	435 CFM *	1237 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17
	<u> </u>			

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

05-Mar-93

BUILDING NO .: BLDG. TYPE:

625 BATTALION HQ

ENERGY CONSTANT CALCULATIONS

				111111111111111111111111111111111111111	
ECC	13780 kWH -	13620 kWH	=	1.37E-05 kWH/CFM-HR	
Ī	9430 CFM *	1237 HR/YR		The state of the s	
ECHC	13780 kWH -	13620 kWH	=	4.58E-06 kWH/CFM-HR	
	9430 CFM *	3702 HR/YR		TOTAL LIP	
NSUCHC	21410 kWH -	15280 kWH	=	1.29E-04 kWH/CFM-HR	
	9430 CFM *	5058 HR/YR		The second secon	
NSUCC	21410 kWH -	15280 kWH	_ =	3.85E-04 kWH/CFM-HR	
	9430 CFM *	1691 HR/YR		The state of the s	
DDCCHC	15280 kWH -	13780 kWH	_ =	4.30E-05 kWH/CFM-HR	
	9430 CFM *	3702 HR/YR		The state of the s	
DDCCC		13780 kWH	=	1.29E-04 kWH/CFM-HR	
	9430 CFM *	1237 HR/YR			
NSC	528.7 MBtu -	347.31 MBtu	_ =	8.19E+04 Btu/UA	
	2216	UA			
DSC	347.31 MBtu -	323.66 MBtu	」 =	1.07E+04 Btu/UA	
	2216				
OPT	(2 HR/DAY X 272 DAY	/YR) - 294	HR/YR		
				250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)	10.0.114/11/701	
	•		=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	

EMCENGINE	ERS, INC.						01-Feb-93
PROJECT: EEAP, EM	CS EXPANSION	FEASIBILITY STU	IDY		Ī	3Y:	BHS
CLIENT CONTRACT N					3	JOB:	3204.000
CLIENT PROJ. ENG.:						CHK:	
LOCATION: FT LEON					1	FILE:	625BHL
			041 0111	ATIONIC			
B	UILDING HE	ATING LOAD	CALCUL	AHUN S	HEEL		
BLDG NO:	625 BLDG NA	ME: BATTALION	на				
BLDG FUNCTION:		RATION AND CLA					
FLOOR AREA: (SQ. FT)		5,795			•	# FLOORS _	1
SLAB PERIMETER: (FT)		312					ŀ
	EDIESED ELEVATIC	AL DLANCY					İ
I. AREAS: ([] FIELD V	ERIFIED ELEVATIO	· NORTH	SOUTH	EAST	WEST	TOTAL	}
WALLS, GROSS	(SQ. FT)	1,303	1,135	587	981	4,006	
GLASS	(SQ. FT)	180	135	105	90	510	
PERSONNEL DOOR	(SQ. FT)	84	0	0	42	126	
INSULATED PANEL	(SQ. FT)	117	68	58	234	477	
WALLS, NET	(SQ. FT)	922	932	424	615	2,893	
ROOF AREA (OR CEILIN	IG AREA IF ATTIC	IS UNCONDITION	ED)		(SQ. FT)	5,795	
INSULATED PANEL	(SQ. FT)	477	PERSONNE		(SQ. FT)	126	
BASEMENT WALLS	(SQ. FT)	0	0	0	0	0	
II. CONSTRUCTION: ([] FIELD VERIFIED	WALL, ROOF, WI	NDOW, DOO	R TYPES)			
WALLS: (SKETCH CRO	SS SECTION OF V	VALL)			COMPONEN		R-VALUE
					OUTSIDE A		0.17
					4' FACE BE		0.43 0.91
					AIR SPACE		1.89
		4" FAC	EBRICK	4.	6' CMU		1.09
		AIR SP	ACE	5. 6.			
		6"C1	10	7.	INSIDE AIR	FILM	0.68
4				,.	TOTAL R-		4.08
	4				10.7.2.	U=1/R	0.245
ROOF: (SKETCH CROS	C CECTION OF P	OOF)			COMPONEN	NTS	R-VALUE
HOUP: (SKETCH CHO.	33 3EOHOROI II			1.	OUTSIDE A	AR FILM	0.17
1		BUILT	-UP ROOF	2.	BUILT UP F	ROOF	0.34
		1" 1NSC	JLATIO N	3.	1" INSULAT	TION	3.32
11111111111		AIR S	PACE		AIR SPACE		0.91
7					3" BATT IN		11.00
4	× × = ×××××	3"BA	TT INSULAT	1610 6.	ACOUSTIC		1.79
$\Gamma \Omega \Omega \Omega \Omega \Omega \Omega \Omega \Omega$	MMMM	1000 Acous	TIC TILE	7.	INSIDE AIF		0.68
					TOTAL R	-ROOF =	18.20
'						U=1/R	0.055
						R-GLASS	1.61
GLASS TYPE:		NNVERNON' C.L. 1	WNDV, SSA,	.88 S.C.		SLF	0.83
SLAB TYPE FLOOR:	CEMENT					R-BASEM	
BASEMENT TYPE:	NONE					R-PANEL	4.20
INSULATED PANEL:	PE: METAL					R-PDOOR	
PERSONNEL DOOR TY	FE. WEIAL						
III. INFILTRATION:	\ FT\		X CFM / S	O FT	0.042	=	0
TIGHT WALL H/M/L (SC		4006			0.092		369
AVG. WALL H/M/L (SQ.		4000	X CFM / S		0.000		0
LEAKY WALL H/M/L (SI DOOR OPENINGS / HF	GINGLE DOOR	20		PENING /HF			32
DOOR OPENINGS / HE	- DOUBLE DOOR	RS 25	X CFM /O				35
DOUR OFENINGS / TI	1 - DOODLE DOO			ILTRATION		=	435
							114
UA PANI				X PANEL "			49
UA PDO				X DOOR 'U			709
UA WAL				X WALL 'U			318
UA ROO				X ROOF 'U			317
UA GLAS				X GLASS	0.830		259
UA SLAE				X BASE. "L			0
UA BASI			<u> </u>	X A. T. F.	1.035		450
INFILTR	ATION = CF	M 43		<u> </u>			2,216
					A (BTU/HR°	-	

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

	01-Feb	4
EMC NO:	DATE:	DEEDABED BY

PREPARED BY: CHECKED BY: FILE: BLDG:

AJN CEL 62521 625

ZONE

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activit		Typical	Sensible		TOT Sen. TOT. La	TOT. Lad
Š.	People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
_	02	2	Seated very fight work (writing)	Offices, hotels, apts	245	155	155 17,150	10,850
TOTAL	02					TOTAL	17,150	17,150 10,850
								1

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Focture			
No.	Fixtures	Type	Description	Watts/Fixture Total Wattage	Total Wattage
-	42		8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix)	168	7,056
	35	9	6 Fluorescent, 2 - 34w temps, 16w ballast (2x4 ft. fixture)	84	2,940
	15	18	18 Incandescent 60w	09	006
TOTAL	35			TOTAL	10,896

	Total	(BTU)	6,143	5,546	4,778	683	10,239	5,358	1,502					34,249
		Total Wattage	1,800	1,625	1,400	200	3,000	1,570	440					10,035
	Heat Gain	to Space (%)	15%	20%	91%	10%	30%	20%	80%					34%
		Average Wattage	300	1,625	350	100	1,500	1,570	220					TOTAL
Peak Value for Internal Gains		Description	62 Television (Color, tube)	48 Paper Shredder	3 Microcomputer	12 Typewriter	24 Coffee Maker	10 Copiers (Large)	Overhead Projector					
	Equip.	Type	62	848	က			9						
	No. of	No. Equipmen Type	9	-	4	2	2	-	2					
	Zone	Š	-							, .				

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

01-Feb-93	N.A	Œ	625Z1
DATE:	PREPARED BY:	CHECKED BY:	FIE

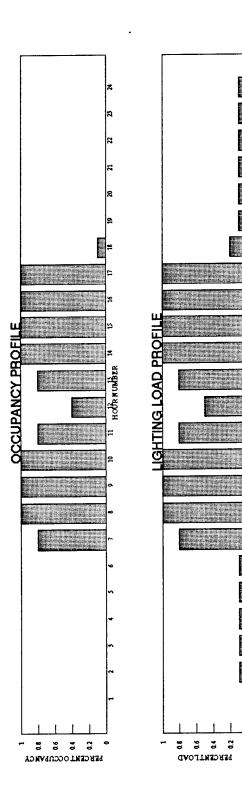
3204-000

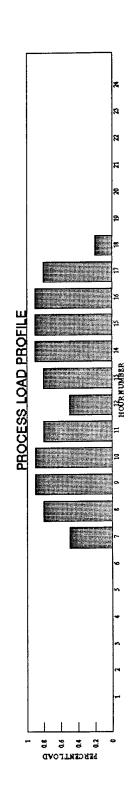
EMC NO.:

FILE: BLDG: ZONE:

625

BLDG	DG BLDG	TYPE OF										Ĩ	OUR	₹	MBER										
TYPE	FUNCTION	PROFILE	-	2	၉	4	2	9	7	8	6	9		. 7	13 1	4 15	16	11	18	16 17 18 19 20	20	21 22		23	24
3	Administration	OCCUPANCY						Н	9.0	-	-	F	9 8	4.	8		_	-	0.1				Н	-	П
		LIGHTING	0.1	0.1	0.1	0.	0.1	0.1	0.8	-	-	1	0.8 0	5 0	8		_	1	02	0.1	0.1	0.1	0.1	0.1	0.1
		PROCESS							0.5	0.8	3 0 9 0 9 0 8 0 5) 60	0.8 0.5	ш	60 80	60 6	60 (0.8	02					\dashv	





HOÜR NUMBER

BLDG 625 - BATTALION HQ BASERUN

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 5.000000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                                                           1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
---- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                                     YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

3.500000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                                                                                          70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)
                                                                                                                        70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 66521.000000
FLOOR AREA (SQFT) 5795.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 272020.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -334850.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 57950.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 435.000000
INFILTRATION PROFILE
                                                                                                                                                     .850
                                                                                                                                                                              1.00
                                                                          .850 .850
                                                                                                                             .850
                                                 .850
                      .850
                                                                          1.00
                                                                                                  1.00
                                                                                                                            1.00
                                                                                                                                                      1.00
                                                                                                                                                                               1.00
   1.00 1.00 1.00
                                                                                                                              .850
                                                                                                                                                      .850
                                                                                                    .850
                                                                                                                                                                              .850
                                                                           .850
   1.00
                        1.00
                                                  .850
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
3.920000E-01
2.165000E-02
8.330000E-03
69132.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 288.00000
                                                                                                    288.000000
PARTITION UA BTU/HR-F (GUA)

DOOR UA BTU/HR-F (DUA)

WINDOW GLASS NUMBER (NG)

0.000000E+00

49.200000

30
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
WALL DATA

WALL NUMBER

AZIMUTH ANGLE (AZ)

WALL AREA SQFT (AWLL)

WINDOW AREA SQFT (AWND)

WINDOW HEIGHT FT (WNDH)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WIDTH OF OVERHANG (WOH)

OVERHANG HGT ABV WNDW(HOH)

WALL DATA

1 2 3 4

40 90.00

180.00 -90.00

180.00

105.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.00

10.
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .243	120.0 .244	120.0 .244
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.01837 5	.01822 5	.01829 5	.01829 5
BN FACTORS BN (BN) N=1 N=2	.00003	.00003	.00003 .00281	.00003 .00281 .01012
N=3 N=4 N=5	.00498	.00494	.00496	.00496 .00036
N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5
DN FACTORS N=1 N=2 N=3 N=4 N=5	1.00000 -1.50943 .65654	-1.50943 .65654	-1.50943 .65654	-1.50943 .65654
N=4 N=5 N=6	07415 .00212 ******	07415 .00212 ******	.00212	.00212
ROOF AREA SQFT (AROF) 5795 ROOF U VALUE BTU/HR-SQFT-F (UR POOF TRANS FUNCTIONS USED (1=Y	.000000 F) 5.50 ES. 0=NO)	0000E-02 (IROOF)		
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR .106E-04 .156E-02 .582E-02	1.04/0	146 02		
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.18 .410	() 444E-01 0.00000	.500E-03	999.	
SKYLIGHT AZIMUTH ANGLE DEGREES SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	(AZSK)	9999.000	0000	
SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS)	OW) U.C. FT (SKOH)	0.000	00E+00	
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR	SHSK) (MST SHSK (MND N	.000000E+0 .NDST)	00 1	1
SUMMER END MONTH AND DAT FOR E SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	R-F (SKYU) -HR-F (SKY	1. (UN)	292998 1.292998	DE-01

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	11.	11645.	17150.	10850.		
HOUR	HO	URLY FRAC	TION OF PE	EAK		
1	.100	.000	.000	.000	70.0	76.0
2	.100	.000	.000	.000	70.0	76.0
3	.100	.000	.000	.000	70.0	76.0
4	.100	.000	.000	.000	70.0	76.0
5	.100	.000	.000	.000	70.0	76.0
6	.100	.000	.000	.000	70.0	76.0
7	.800	.500	.800	.800	70.0	76.0
8	1.000	.800	1.000	1.000	70.0	76.0
9	1.000	.900	1.000	1.000	70.0	76.0
10	1.000	.900	1.000	1.000	70.0	76.0
11	.800	.800	.800	.800	70.0	76.0
12	.500	.500	.400	.400	70.0	76.0

13	.800	.800	.800	.800	70.0	76	5.0	
14	1.000	.900	1.000	1.000			5.0	
15	1.000	.900	1.000	1.000			5.0	
16	1.000	.900	1.000	1.000	70.0	76	5.0	
17	1.000	.800	1.000	1.000	70.0	76	5.0	
18	.200	.200	.100	.100	70.0	76	5.0	
19	.100	.000	.100 .000 .000	.000	70.0		5.0	
20	.100	.000	.000	.000	70.0		5.0 5.0	
21	.100	.000	.000	.000	70.0	70	5.0	
22	.100		.000	.000	70.0 70.0	7	5.0	
23	.100	.000		.000	70.0	70	5.0	
24	.100	.000	.000	.000	70.U	,,		
NO HEATI	NG ABOVE AME	BIENT TEMP	. OF (THLKO)T) 6	5.000000			
NO COOLI	NG BELOW AME	BIENT TEMP	. OF (TCLK	or) o	5.00000			
SYSTEM T	YPE, (IECN)		2					
SUPPLY A	IR CFM (SACE	M) 943	0.000000	20000				
ECONOMIZ:	ER HIGH TEME	LIMIT F	0.00	00000				
SYSTEM S	UPPLY AIR ST	TART TIME	HR 0.000	00005+00				
SYSTEM S	UPPLY AIR ST	OP TIME H.	K 24.	000000				
SYSTEM M	IXED AIR TEN	MP(TMXAIR))U.CC (CW.CO) NEDO	1 000	000E-01			
MIN OUTS	IDE AIR FRAC	TION OF S	ACEM (UAEK)	1.000	0006 01			
FAN EFFI	CIENCY (EFAN	5.50	0000E-01	2500005-0	1			
FAN TOTA	L PRESSURE	N. WATER	יי (אדר סייי)	224000 00	7			
HEATING	PLANT RATED	OUTPUT BT	(HFLOI)	342500.00	0000			
HEATING	PLANT RATED	INPUT BIU	(ULTIN)	342500.00 T ק/ שופגיי יי	T.# \			
HEATING .	PLANT PART I	JOAD VS FR	AC OF INPUT	300	LH) .369	. 400	.451	
.100	.191	.200	.200	.300	.505		V	
.500	.537	.600	.625	.700	.718	.800	.812	
.900	.906	1.00	1.00					
CUTTIED !	MYDE /TTYDCL	1 \	4					
COOL TMG	CHTAG TMATC	OUTPUT BT	U (CFLOT)	360000.0	00000			
COOLING	PLANT RATED	INPUT BTU	(CFLIN)	82936.00	0000			
COOLING	PLANT PART I	OAD FRAC	VS FRAC RAT	TED COP (P	LC)			
.000		.000	.000	.000	LC)	.000	.000	
							600	
.000	.000	.000	.000	.000	.000	.000	.000	
			•••					
.000	.000	.000	.000					

BLDG 625 - BATTALION HQ BASERUN

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOR AND				VENT AND	
NO TOTAL	1030		WINDOW	POOF	SLAR	BSMT	WALL	WINDOW	INFL	LATENT .00
MNTH	LOAD	CATN	7.16	.00	.00	.00	.00	.00	.00	.00
UAIN	-85.77	LOSS		-9.28	-0.00	.00	-11.23	7.00	, 5 . 5 5	
FFR	.00	GAIN	9.01	.00	.00	.00	.05 -12.97	.00	.00	.00
	-66.66	LOSS		-7.65	-7.51					
MAD	. 76	GATN	11.47	.04	.00	.00	.75	.00	.00	.00
MIN	.76 -51.92						-10.42			
APR	9.41	GATN	11.75	.31	.04	.00	2.35	.03	.28	1.72
	-19.95						2.35 -5.11			
MAY	23.74	GAIN	12.85	.75	.14	.00	4.40	.11	.88	6.49
	-2.55	LOSS		-2.58	-2.47	.00	-2.13	-1.90	-18.27	.00
TIIN.	58.86	GAIN	13.02	1.28	.40	.00	6.72	.32	2.63	25.37
JON	58.86 .00	LOSS		-1.46	-1.17					
.TIIT.	83.40	GAIN	13.16	1.93	1.02	.00	9.03	.82	6.91	35.83
004		LOSS		-1.05	72	.00	29			
Alic	77.61	GAIN	11.68	1.54	.77		7.57	.60	4.99	35.59
AUG	.00			-1.15	79	.00	35			
SEP	42.01	GAIN	9.84	.72	.39		4.39	.32	2.76	19.62
	-3.86	LOSS		-2.27	-1.93	.00	-1.92			
ОСТ	7.77 -17.33	GAIN	8.45	.13	.06	.00	1.31	.05	.40	2.52
-	-17.33									
NOV	1.16	GAIN	6.72	.00	.00	.00	.30	.00	.00	.36
	-41.24	LOSS		-6.18	-5.71	.00	-9.97	-4.45	-43.30	.00
DEC	.00	GAIN	6.26	.00	.00	.00	.01	.00	.00	.00
	-83.93	LOSS		-9.21	-8.69	.00	-17.35	-6.84	-70.36	.00
ጥርጥ	305.	GAIN	121.	7.	3.	0.	37.	2.	19.	127.
101	305. -373.	LOSS		-56.	-53.	0.	-84.	-42.	-417.	0.
			٥-	0000	DMIII 631	DEC 19	HOUR 10	25 M1	פוד איי יינ	EMP 6.
MAX	HEATING COOLING	LOAD=	-27	2020.	RIUH ON	TIT. 26	HOUR 10	AMI	BIENT TE	MP 93.
MAX	COOLING	LOAD=	28	JZ30.	PIOU ON	70H 20	MOOK 17	444		

ZONE UA BTU/HR-F 1506.6

BLDG 625 - BATTALION HQ BASERUN

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		HOURS WHEN RE NOT MET	MAXIMUM BTI HEATING	
JAN	678	0	10	0	2720E+06	.0000
FEB	559	0	0	0	2488E+06	.0000
MAR	516	23	0	0	2503E+06	.9976E+05
APR	268	136	0	0	1588E+06	.1514E+06
MAY	48	301	0	0	1091E+06	.1944E+06
JUN	0	465	Ō	0	.0000	.2574E+06
JUL	ő	587	Ō	0	.0000	.2833E+06
AUG	ŏ	565	Ō	0	.0000	.2584E+06
	77	344	Ö	Ō	1055E+06	.2445E+06
SEP	270	109	ő		1482E+06	.1828E+06
OCT		27	ŏ		2136E+06	.1250E+06
NOV	475	 :	14	•	2720E+06	.0000
DEC	709	0		•	2720E+06	.2833E+06
YEAR	3600	2557	24	0	Z / Z U E T U O	. 2033E100

SYSTEM TOTALS

						MAXIMUM
HEATING MILLION	COOLING THOUSAND		PROCESS MILLION	FANS THOUSAND	MILLION	ELECTRIC DEMAND
BTU	KWH	KWH	BTU	KWH	BTU	KW
118.32	.00	3.32	8.23	1.24	22.94	12.6
93.14	.00	2.95	7.32	1.12	20.46	12.6
75.69	.07	3.26	8.08	1.24	22.60	20.5
31.91	.78	3.14	7.77	1.20	21.77	23.5
4.71	1.85	3.32	8.23	1.24	22.94	26.4
.00	4.38	3.14	7.77	1.20	21.77	31.1
.00	6.22	3.26	8.08	1.24	22.60	33.0
.00	5.79	3.32	8.23	1.24	22.94	31.2
7.24	3.17	3.08	7.62	1.20	21.42	29.9
29.24	.63	3.32	8.23	1.24	22.94	25.6
62.66	.10	3.20	7.93	1.20	22.11	21.9
117.71	.00	3.20	7.93	1.24	22.25	12.6
540.62	22.97	38.54	95.41	14.55	266.75	33.0
	MILLION BTU 118.32 93.14 75.69 31.91 4.71 .00 .00 .00 7.24 29.24 62.66 117.71	HEATING MILLION BTU COOLING THOUSAND KWH 118.32 .00 93.14 .00 75.69 .07 31.91 .78 4.71 1.85 .00 4.38 .00 6.22 .00 5.79 7.24 3.17 29.24 .63 62.66 .10 117.71 .00	HEATING MILLION BTU COOLING THOUSAND KWH LIGHTING THOUSAND KWH 118.32 .00 3.32 93.14 .00 2.95 75.69 .07 3.26 31.91 .78 3.14 4.71 1.85 3.32 .00 4.38 3.14 .00 6.22 3.26 .00 5.79 3.32 7.24 3.17 3.08 29.24 .63 3.32 62.66 .10 3.20 117.71 .00 3.20	HEATING MILLION BTU COOLING THOUSAND KWH LIGHTING THOUSAND KWH PROCESS MILLION BTU 118.32 .00 3.32 8.23 93.14 .00 2.95 7.32 75.69 .07 3.26 8.08 31.91 .78 3.14 7.77 4.71 1.85 3.32 8.23 .00 4.38 3.14 7.77 .00 6.22 3.26 8.08 .00 5.79 3.32 8.23 7.24 3.17 3.08 7.62 29.24 .63 3.32 8.23 62.66 .10 3.20 7.93 117.71 .00 3.20 7.93	HEATING MILLION BTU COOLING THOUSAND KWH LIGHTING THOUSAND KWH PROCESS MILLION BTU FANS THOUSAND KWH 118.32 .00 3.32 8.23 1.24 93.14 .00 2.95 7.32 1.12 75.69 .07 3.26 8.08 1.24 31.91 .78 3.14 7.77 1.20 4.71 1.85 3.32 8.23 1.24 .00 4.38 3.14 7.77 1.20 .00 6.22 3.26 8.08 1.24 .00 5.79 3.32 8.23 1.24 7.24 3.17 3.08 7.62 1.20 29.24 .63 3.32 8.23 1.24 62.66 .10 3.20 7.93 1.20 117.71 .00 3.20 7.93 1.24	HEATING HEATING HIGHTING HOUSAND HULLION HUL

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 154544. BTU/(SQFT-YEAR)

BLDG 625 - BATTALION HQ BASERUN

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYS TEMP. DEG +	DRIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	Ο.	0.	0	0	.0000	2720E+06
FEB	1421.	901.	1.000	37.	ο.	0.	0	0	.0000	2488E+06
MAR	1864.	1216.	1.000	43.	ο.	0.	0	0	.9976E+05	2503E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1514E+06	1588E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.1944E+06	1091E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2574E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.2833E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.2584E+06	.0000
SEP	1800.	1330.	1.000	68.	ο.	0.	0	0	.2445E+06	1055E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.1828E+06	1482E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.1250E+06	2136E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	2720E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625.I BLDG 625 - BATTALION HQ BASERUN

									FAN	TOTAL
INTERNA	INTE	RNAL S	URE F			COIN- CIDENT	LIGHTING THOUSAND	PROCESS MILLION	HEAT MILLION	HEAT GAIN MILLION
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	BTU	BTU
JAN	70.	76.	68.	4 27	17		3.32	8.23	4.22	22.94
FEB	70.	75.	69.	13 2	17		2.95	7.32	3.81	20.46
MAR	71.	77.	69.	12 4	16		3.26	8.08	4.22	22.60
APR	73.	78.	69.	30 9	16		3.14	7.77	4.08	21.77
MAY	75.	78.	69.	15 11	15		3.32	8.23	4.22	22.94
JUN	76.	78.	71.	27 17	15		3.14	7.77	4.08	21.77
JUL	77.	78.	72.	3 10	15		3.26	8.08	4.22	22.60
AUG	76.	78.	70.	30 25	14		3.32	8.23	4.22	22.94
SEP	75.	78.	69.	11 15	15		3.08	7.62	4.08	21.42
OCT	73.	78.	69.	5 28	15	-	3.32	8.23	4.22	22.94
NOV	71.	77.	69.	8	16	5 75. 5 18.	3.20	7.93	4.08	22.11
DEC	70.	73.	65.	12 18		5 59. 6 0.	3.20	7.93	4.22	22.25
YEAR							38.54	95.41	49.64	266.75

```
----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
 ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 WEEKEND INTERNAL GAINS FACTOR (WKEND) 5.000000E-01
 LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
 SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                                                              1
 NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 NUMBER OF ZONES (NZ)
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                                         YEAR 1955
 STATION 13995
 SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
 SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

TO .00000

TO .000000
                                                                                                                            70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 66521.000000
 FLOOR AREA (SQFT) 5795.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 272020.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -334850.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 57950.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 435.000000
 INFILTRATION PROFILE
                                                                                                                                  .850 .850
                                                                                                                                                                                     1.00
                                                   .850 .850 .850
                        .850
   1.00 1.00 1.00 1.00
                                                                                                                                 1.00
                                                                                                                                                                                     1.00
                                                                                                       1.00
                                                                                                                                                          1.00
                                                                                                                                   .850
                                                                                                                                                           .850
                                                                                                                                                                                     .850
                                                                                                       .850
                                                                              .850
                          1.00
                                                    .850
    1.00
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

69132.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 288.00000
                                                                                                       288.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 49.200000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WINDOW WIDTH FT (WNDW)
WINDOW WINDOW WIDTH FT (WNDW)
WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDOW WINDO
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	•
U VALUE BTU/(HR-SQFT-F) (UW)	. 245	.243	.244	. 2 7 7	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6	01027	01022	01020	01829	
CN FACTORS	.0103/	.01022	.01029	.01029	
NUMBER OF BN FACTORS (NB	5	5	ə	3	
BN FACTORS BN (BN)	00000	00003	00003	00003	
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00280	.00281	.00281	
N=3	.01017	.01008	.01012	.01012	
N=4	.00498	.00494	.00496	.00496	
N=5	.00037	.00036	.00036	.00036	
N=6	*****	****	*****	******	
NUMBER OF DN FACTORS (ND)	5	5	5	5	
DV DACHODC					
N=1	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N-6	*****	*****	*****	*****	
DOOR ADEA CORT (ADOR) 5795	- 000000				
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	F) 5.50	0000E-02			
BOOR TRANS FINCTIONS HISED (1=V	ES. O=NO)	(TROOF)	1		
ROOF C MDANGEED FUNCTION (CND)	1 0470	14E-02			
ROOF B TRANSFER FUNCTIONS (BNR	1				
.106E-04 .156E-02 .582E-02	/ 287E-02	.212E-03	.106E+04		
TAGE & MENNIONE PRINCETONS (DND	1				
1.00 -1.18 .410 SKYLIGHT TILT DEGREES (TILT)	/ - 444E-01	500E-03	999.		
1.00 -1.10 .410	0.00000)F+00	,,,,		
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	(7.75K)	2000 000	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	(M45N))	000		
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	00000000	,			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00	000000			
SKYLTCHT OVERHANG WIDTH FT (SK	OW) U.C		007100		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	005+00		
SKYLIGHT GLASS NUMBER (NS)	1		•		
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK)).000000E+0	1	1	
SUMMER START MONTH AND DAY FOR	SHSK (MST	(, NDST)	, 1	1	
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	(מאמו)	1	T	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	0.00000E+	-00			
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	(UN)	1.292998	n 01	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	ACE (FAP)	3.400000)E-01	
EMBRURN COOLING TURDMOSTAT DDO	rtrr				
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
					56.0
76.0 76.0 76.0	76.0	76.0	76.0	76.0	76.0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT PRO	FILE				
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
70.0 70.0 70.0	70.0	70.0	70.0	70.0	70.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0

	INTER	NAL GAINS	AND I	PROFILES		-
						STAT SET
					POINT	DEG F
KW		- BTU/HR - PEOPLE		 OPLE		
LIGHTS I	PROCESS	SENSIBLE	LATI	ENT	HEATING	COOLING

```
11645. 17150. 10850.
           11. 11645. 17150. 10850. --- HOURLY FRACTION OF PEAK ----
 PEAK VAL
HOUR
                                                          55.0
55.0
                                                                        90.0
            .100 .000 .000 .000
    1
                                                                       90.0
                                                                        90.0
                                                                       90.0
                                                                       90.0
                                                                       90.0
                                                                        90.0
                                                                        76.0
                                                                        76.0
                                                                        76.0
                                                                        76.0
                                                                        76.0
                                                                        76.0
                                                                        76.0
                                                                        76.0
                                                                        90.0
                                                                      90.0
                                                                      90.0
                                                                       90.0
                                                                     90.0
                                                                       90.0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 9430.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 68.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.250000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 274000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 342500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                .286 .300 .369 .400 .451
                      .200
           .191
 .100
           .537 .600 .625 .700 .718 .800
                                                                           .812
 .500
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
COOLING PLANT RATED OUTPUT BTU (CFLOT) 360000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 82936.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                .000 .000 .000
                                                                            .000
                                                                  .000
                       .000
           .000
                                                      .000
                                                                 .000
                                                                            .000
                                           .000
                                  .000
           .000
                      .000
  .000
                                 .000
                     .000
  .000
           .000
```

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOF				VENT	
			THRU		AND				AND	
MNTH	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW	INFL	LATENT
	.00		7.16	.00	.00	.00	.00	.00	.00	.00
		LOSS		-7.65			-13.07			
FEB	.00	GAIN	9.01	.00	.00 -6.10	.00	.12	.00	.00	.00
	-46.47	LOSS		-6.33	-6.10	.00	-9.61	-4.88 -	-49.14	.00
MAR	.57	GAIN	11.47	.05	.00	.00	.92	.00	.01	.00
	-34.86			-5.79	-5.81	.00	-7.77	-4.64 -	-45.67	.00
APR	7.32	GAIN	11.75	.32	.05	.00	2.43	.04	.33	1.38
	-12.30			-3.65	-3.66	.00	-3.98	-2.93 -	-27.48	.00
MAY	20.10	GAIN	12.85	.72	.13	.00	4.19	.10	.83	5.23
	-1.09			-2.68	-2.60	.00	-2.26	-2.00 -	-18.39	.00
TIIN	46.56	CATN	13.02	1.20	. 38	.00	6.11	.30	2.47	17.17
JUN	.00	LOSS	13.02	-1.74	-1.53	- 00	93		-10.34	.00
.TTTT.	58.04	GATN	13.16	1.75	.88	.00	7.79 59	.70	5.99	17.92
001	.00		20120	-1.47	-1.21	.00	59	94	-8.53	.00
AUG	54.70	GAIN	11.68	1.42	.71	.00	6.62	.55	4.60	18.42
1100	.00	LOSS		-1.53	-1.26	.00	69	97	-8.03	.00
SEP	31.14	GAIN	9.84	.68	.37	.00	4.06	.30	2.58	11.94
021	-1.70	LOSS		-2.37	-2.05	.00	-1.95	-1.61 -	-14.54	.00
ОСТ	6.24	GAIN	8.45	.14	.07	.00	1.40	.06	.47	1.90
	-10.50	LOSS		-3.99	-3.51	.00	-4.63	-2.73 -	-24.97	.00
NOV	.95	GATN	6.72	.00	.00	.00	.35	.00	.00	.28
	-27.26				.00 -4.73					
DEC	.00 -59.50	GAIN	6.26	.00	.00	.00	.03	.00	.00	.00
TOT	226. -254.	GAIN	121.	6.	3.	0.	34.	2.	17.	74.
	-254.	LOSS		-50.	-47.	0.	-66.	-37.	-354.	0.
	*********	TOND-	_07	2020	אס עוויים	DEC 31	HOIIR 9	AMR.	IENT TEN	MP 38.
MAX MAX	HEATING COOLING	LOAD=	33	4850.	BTUH ON	JUL 16	HOUR 8	AMB:	IENT TEN	1P 82.

ZONE UA BTU/HR-F 1506.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-2.I

									FAN	TOTAL
INTERNA	INTE	PERAT	SPACE URE F			OIN- CIDENT	LIGHTING THOUSAND		HEAT MILLION	HEAT GAIN MILLION
MONTH	AVG.	MAX	MIN	DAY	HR I	AMBT.	KWH	BTU	BTU	BTU
JAN	63.	75.	54.	4 29	17 6	62. 13.	3.32	8.23	4.22	22.94
FEB	64.	74.	54.	13 2	17 6	64. 14.	2.95	7.32	3.81	20.46
MAR	66.	78.	54.	28 4	19 6	68. 15.	3.26	8.08	4.22	22.60
APR	71.	80.	55.	30 9	21 6	71. 30.	3.14	7.77	4.08	21.77
MAY	75.	80.	61.	29 11	22 6	68. 39.	3.32	8.23	4.22	22.94
JUN	78.	82.	72.	30 17	24 6	75. 57.	3.14	7.77	4.08	21.77
JUL	79.	85.	73.	16 24	3 6	80. 66.	3.26	8.08	4.22	22.60
AUG	79.	82.	71.	1 25	7 7	76. 55.	3.32	8.23	4.22	22.94
SEP	76.	82.	62.	2 15	24 7	76. 44.	3.08	7.62	4.08	21.42
OCT	71.	79.	55.	4 28	21 8	69. 38.	3.32	8.23	4.22	22.94
NOV	67.	77.	54.	8 3	16 6	75. 18.	3.20	7.93	4.08	22.11
DEC	63.	72.	54.	12 18	17 6	52. 0.	3.20	7.93	4.22	22.25
YEAR							38.54	95.41	49.64	266.75

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	NUMBER OF		MAXIMUM BTI	
		INCLUDING				=
MONTH	HEATING	ECONOMIZER	HEATING	COOLING	HEATING	COOLING
JAN	425	0	93	0	2720E+06	.0000
FEB	328	Ō	72	0	2720E+06	.0000
MAR	266	11	49	0	2720E+06	.9391E+05
APR	108	81	22	_	2720E+06	.1518E+06
	12	192	Õ	Ö	2424E+06	.1947E+06
MAY		269	ŏ	ŏ	.0000	.2869E+06
JUN	0	_	_	_		.3349E+06
JUL	0	288	0	2	.0000	
AUG	0	283	0	0	.0000	.3240E+06
SEP	20	188	0	0	2265E+06	.3230E+06
OCT	96	66	13	0	2720E+06	.1829E+06
NOV	231	17	41	0	2720E+06	.1254E+06
DEC	426	0	93	0	2720E+06	.0000
		_	383	2	2720E+06	.3349E+06
YEAR	1912	1395	202	2	. Z , Z OB 100	.00191.00

SYSTEM TOTALS

		ENERG	Y CONSUMPT	TANS	OTAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC	
	HEATING MILLION	COOLING THOUSAND	THOUSAND	PROCESS MILLION	THOUSAND	MILLION	DEMAND
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW
JAN	82.23	.00	3.32	8.23	1.24	22.94	12.6
FEB	63.47	.00	2.95	7.32	1.12	20.46	12.6
MAR	48.38	.05	3.26	8.08	1.24	22.60	20.1
APR	17.73	.58	3.14	7.77	1.20	21.77	23.6
MAY	1.66	1.52	3.32	8.23	1.24	22.94	26.4
JUN	.00	3.37	3.14	7.77	1.20	21.77	33.3
JUL	.00	4.19	3.26	8.08	1.24	22.60	36.0
AUG	.00	3.94	3.32	8.23	1.24	22.94	35.5
SEP	2.63	2.26	3.08	7.62	1.20	21.42	35.5
OCT	15.30	.48	3.32	8.23	1.24	22.94	25.6
NOV	38.84	.08	3.20	7.93	1.20	22.11	21.9
DEC	81.36	.00	3.20	7.93	1.24	22.25	12.6
YEAR	351.60	16.47	38.54	95.41	14.55	266.75	36.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 118102. BTU/(SQFT-YEAR)

BLDG 625 - BATTALION HQ NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

MONTH	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	2720E+06
FEB	1421.	901.	1.000	37.	0.	٥.	0	0	.0000	2720E+06
MAR	1864.	1216.	1.000	43.	0.	ο.	0	0	.9391E+05	2720E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1518E+06	2720E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.1947E+06	2424E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2869E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.3349E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.3240E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.3230E+06	2265E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.1829E+06	2720E+06
NOV	1008.	710.	1.000	47.	0.	٥.	0	0	.1254E+06	2720E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	2720E+06

```
625-1.I
BEACON Energy Analysis By Energy Systems Engineers, Inc.
 BLDG 625 - BATTALION HQ DDC (FT LEONARD WOOD, MO)
 ----- PROGRAM CONTROL OPTIONS -----
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (ICWK) 3
WEEKEND INTERNAL GAINS FACTOR (WKEND) 5.000000E-01
LAST CASE FLAG (1=YES, 0=NO) (ISBOC)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
STATION 13995
                    YEAR 1955
SITE LATITUDE DEG (AL1)
                                  37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AND THIRE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                             70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
                                                            70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)
                                                        9.00000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 66521.000000
FLOOR AREA (SQFT) 5795.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 272020.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -334850.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 57950.000000
                                                   435.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
INFILTRATION PROFILE
                                       .850
                                                               .850
                                                                            .850
                                                                                          1.00
                                                   .850
             .850
                          .850
  .850
                                                  1.00
                                                               1.00
                                                                             1.00
                                                                                         1.00
                        1.00
                                       1.00
             1.00
  1.00
                                                               .850
                                                                             .850
                                                  .850
                                                                                         .850
                          .850
                                       .850
 1.00
             1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 3.920000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-
BUILDING THERMAL MASS MCP BTU/F (CMCP) 69132.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
                                                     288.000000
SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
                                49.200000
DOOR UA BTU/HR-F (DUA)
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

	WALL DAT	Ά		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	1000.0	849.0	1039.0	482.0
WINDOW AREA SQFT (AWND)	135.0	90.0	180.0	105.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	13.5	9.0	18.0	10.5
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE (SOLMX)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.243	.244	.244	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS		21222	01000	01000	
CN FACTORS	.01837	.01822	.01859	.01829	
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN)	00000	00003	00003	00003	
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00280	.00281	.00281	
N=3	.01017	.01008	.01012	.01012	
N=4	.00498	.00494	.00496	.00496	
N=5	.00037	.00036	.00036	.00036	
N=6	*****	******	****	*******	
NUMBER OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS			1 00000	1 00000	
N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.03034	
N=4	07415	07415	0/415	0/415	
N=5	.00212	.00212	.00212	.00212	
N=6	*****	******	*****	*****	
ROOF AREA SQFT (AROF) 5795	.000000				
ROOF U VALUE BTU/HR-SQFT-F (UF	(F) 5.50	0000E-02			
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1		
ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	1.0470	14E-02			
DOOR D TONNEED FINCTIONS (RNS	? 1				
.106E-04 .156E-02 .582E-02	.287E-02	.212E-03	.106E+04		
ROOF D TRANSFER FUNCTIONS (DNF	()	5005 03	000		
1.00 -1.18 .410	444E-01	-200E-03	999.		
1.00 -1.18 .410 SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	7777.000	000		
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00				
SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	000007.00			
SKYLIGHT OVERHANG WIDTH FT (SK	(OW) 0.0	00000E+00	002.00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
SKYLIGHT GLASS NUMBER (NS)	1	000000710	^		
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK) U	. NDCM/	1	1	
SUMMER START MONTH AND DAY FOR	C SHSK (MST	, NDST)	1	1	
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	ן עאט (_	_	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	U.UUUUUUE+	1	202000		
DAYTIME SKY LIGHT U BTU/SQFT-H	IK-F (SKIU)		1 20200		
FRACTION OF PROCESS HEAT TO IN	THR-F (SKI	OB (BAD)	1.232330	r_01	
		CE (FAP)	3.400000	F-01	
WEEKEND COOLING THERMOSTAT PRO)LITE	00.0	00 0	00 0	90 0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
78.0 78.0 78.0	78.0	78.0	78.0	78.0	78.0
78.0 78.0 78.0	70.0	70.0	,		
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
20,0					
WEEKEND HEATING THERMOSTAT PRO	FILE				
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
68.0 68.0 68.0	68.0	68.0	68.0	68.0	68.0
		FF 0	EE 0	EE 0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	25.0

	INTE	RNAL GAINS	AND PR	OFILES		
					THERMO	OSTAT SET
					POINT	DEG F
KW -		- BTU/HR				
		PEOPLE	PEOP			
LIGHTS	PROCESS	SENSIBLE	LATEN	T	HEATING	COOLING

```
10850.
            11. 11645. 17150. 10850. - - - - HOURLY FRACTION OF PEAK - - - -
PEAK VAL
HOUR
                                                                            90.0
             .100 .000 .000 .000
                                                               55.0
                                                                            90.0
                                                                            90.0
                                                                            90.0
                                                                            90.0
                                                                            90.0
                                                                            90.0
                                                                            78.0
                                                                            78.0
                                                                           78.0
                                                                            78.0
                                                                            78.0
                                                                            78.0
                                                                            78.0
                                                                            78.0
                                                                            78.0
                                                                          90.0
                                                                           90.0
                                                                           90.0
                                                             55.0
                                                                           90.0
                                                             55.0
                                                             55.0
55.0
                                                                          90.0
90.0
                                                                            90.0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 9430.000000
ECONOMIZER HIGH TEMP LIMIT F 68.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.250000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 274000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 342500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                  .286 .300 .369 .400 .451
                       .200
            .191
 .100
           .537 .600 .625 .700 .718 .800
                                                                                .812
  .500
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
COOLING PLANT RATED OUTPUT BTU (CFLOT) 360000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 82936.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                       .000
                                                                                 .000
                                                       .000
                                   .000 .000
                        .000
  .000
             .000
                                                          .000
                                                                      .000
                                                                                 .000
                                              .000
                       .000
                                    .000
            .000
  .000
                       .000
                                   .000
  .000
            .000
```

BLDG 625 - BATTALION HQ DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOF AND	'N t			VENT
			THRU		AND				AND
MNTE	LOAD		MINDOM	ROOF	SLAB	BSMT	WALL	MINDOM 1	INFL LATENT
JAN	.00 -57.15	GAIN	7.16	.00	.00	.00	.01	.00 -5.50 -55	.00 .00
	.00	GAIN	9.01	.00	.00	.00	.17	.00 -4.70 -47	.00 .00
	-43.37	LOSS		-6.11	-5.88	.00	-9.11	-4.70 -47.	.21 .00
MAR	.23	GAIN	11.47	.06	.00	.00	1.02	.00	.03 .00
		LOSS		-5.59	-5.59	.00	-7.33	-4.46 -43	.76 .00
APR	5.20	GAIN	11.75	.31	.03	.00	2.37	.03	.25 1.19
	-10.27			-3.63	-3.64	.00	-3.88	-2.92 -27	.19 .00
MAY	16.66	GAIN	12.85	.63	.07	.00	3.83	.06	.45 4.74
		Loss		-2.82	-2.79	.00	-2.50	-2.15 -19	.18 .00
JIIN.	42.09	GAIN	13.02	1.04	.25	.00	5.50	.20 1	.61 16.74
	.00	LOSS		-1.92	-1.75	.00	-1.19	-1.35 -11	.66 .00
JUL.	53.12	GAIN	13.16	1.56	.70	.00	7.09	.56 4	.73 17.34
		LOSS		-1.64	-1.40	.00	80	-1.09 -9	.65 .00
AUG	50.07	GAIN	11.68	1.25	.53	.00	5.93	.41 3. -1.12 -9	.42 18.14
	.00	LOSS		-1.71	-1.45	.00	92	-1.12 -9	.28 .00
SEP	27.39	GAIN	9.84	.60	.28	.00	3.71	.23 1. -1.72 -15	.99 11.42
OCT	4.49	GAIN	8.45	.13	.06	.00	1.40	.05	.39 1.39
	-8.04	LOSS		-3.91	-3.43	.00	-4.45	-2.67 -24	.11 .00
NOV	.55	GAIN	6.72	.00	.00	.00	.39	.00	.01 .19
	-24.19	LOSS		-5.08	-4.53	.00	-7.21	-3.54 -33	.24 .00
DEC	.00	GAIN	6.26	.00	.00	.00	.05	.00	.01 .00
	-56.08	LOSS		-7.33	-6.70	.00	-12.54	-5.27 -52	.63 .00
TOT	200.	GAIN	121.	6.	2.	0.	31.	2. -363	13. 71.
	-232.	LOSS		-50.	-46.	0.	-65.	-36 . -3	49. 0.
									m mm.m 22
MAX	HEATING	LOAD=	-27	2020.	BTUH ON	DEC 31	HOUR 9	AMBIEN'	T TEMP 38. T TEMP 82.
MAX	COOLING	TOWD=	23	4030.	PIOU ON	201 10			

ZONE UA BTU/HR-F 1506.6

FAN

TOTAL

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-1.I BLDG 625 - BATTALION HQ DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI MAX	URE F	DAY		COIN- CIDENT AMBT.		PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	62.	74.	54.	4 29	1	7 62. 6 13.	3.32	8.23	4.22	22.94
FEB	63.	73.	54.	13 2	1	7 64. 6 14.	2.95	7.32	3.81	20.46
MAR	65.	79.	54.	12 4	1	7 64. 6 15.	3.26	8.08	4.22	22.60
APR	71.	81.	55.	30 9	2		3.14	7.77	4.08	21.77
MAY	76.	82.	61.	29 11	2		3.32	8.23	4.22	22.94
JUN	79.	83.	73.	30 17	2:	3 75. 6 57.	3.14	7.77	4.08	21.77
JUL	81.	86.	74.	16 24		2 82. 6 66.	3.26	8.08	4.22	22.60
AUG	80.	83.	72.	12 25	2		3.32	8.23	4.22	22.94
SEP	76.	83.	62.	2 15	2		3.08	7.62	4.08	21.42
OCT	71.	80.	55.	4 28	20		3.32	8.23	4.22	22.94
NOV	66.	79.	54.	8 3	10	6 75. 6 18.	3.20	7.93	4.08	22.11
DEC	62.	71.	54.	12 18	1	7 52. 6 0.	3.20	7.93	4.22	22.25
YEAR							38.54	95.41	49.64	266.75

BLDG 625 - BATTALION HQ DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF LOADS WE	HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING (HEATING	COOLING
JAN	438	0	72	•	2720E+06	.0000
FEB	326	0	57	0	2720E+06	.0000
MAR	255	6	38	0	2720E+06	.6870E+05
APR	103	56	12	0	2720E+06	.1426E+06
MAY	9	163	0	0	1881E+06	.1864E+06
JUN	ń	261	Õ	0	.0000	.2499E+06
JUL	ñ	280	Ō	1	.0000	.3349E+06
AUG	Õ	277	Ö	0	.0000	.2872E+06
SEP	13	168	Ö	Ō	1764E+06	.2833E+06
OCT	85	45	7	Ô	2720E+06	.1743E+06
NOV	224	6	31	0	2720E+06	.1127E+06
DEC	435	ő	74		2720E+06	.0000
YEAR	1888	1262	291	_	2720E+06	.3349E+06
IEAK	1000	1202		-		

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-1.I

SYSTEM TOTALS

		ENERG	Y CONSUMPT	T	MAXIMUM		
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW
JAN	79.07	.00	3.32	8.23	1.24	22.94	12.6
FEB	59.74	.00	2.95	7.32	1.12	20.46	12.6
MAR	44.08	.02	3.26	8.08	1.24	22.60	18.7
APR	15.37	.42	3.14	7.77	1.20	21.77	23.0
MAY	1.06	1.28	3.32	8.23	1.24	22.94	25.8
JUN	.00	3.06	3.14	7.77	1.20	21.77	30.5
JUL	.00	3.84	3.26	8.08	1.24	22.60	36.0
AUG	.00	3.61	3.32	8.23	1.24	22.94	33.3
SEP	1.49	1.99	3.08	7.62	1.20	21.42	33.0
OCT	12.24	.35	3.32	8.23	1.24	22.94	25.0
NOV	35.25	.04	3.20	7.93	1.20	22.11	21.2
DEC	77.93	.00	3.20	7.93	1.24	22.25	12.6
YEAR	326.21	14.62	38.54	95.41	14.55	266.75	36.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 112629. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-1.I

BLDG 625 - BATTALION HQ DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				OIL	iek hon	TITLE D	1111111			
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.		STEM DRIFT G. F	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	2720E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	2720E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.6870E+05	2720E+06
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.1426E+06	2720E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.1864E+06	1881E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2499E+06	.0000
JUL	2470.	1954.	1.000	77.	ο.	0.	0	0	.3349E+06	.0000
AUG	2211.	1784.	1.000	76.	ο.	ο.	0	0	.2872E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.2833E+06	1764E+06
OCT	1394.	924.	1.000	57.	ο.	0.	0	0	.1743E+06	2720E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.1127E+06	2720E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	2720E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-3.I ECONOMIZER (FT LEONARD WOOD, MO) BLDG 625 - BATTALION HO ----- PROGRAM CONTROL OPTIONS -----COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC) WEEKEND INTERNAL GAINS FACTOR (WKEND) 5.000000E-01 LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1 NUMBER OF ZONES (NZ) WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW) ----- SITE AND BUILDING DATA -----*****REAL WEATHER FROM DISK****** FILE NAME MO STATION 13995 YEAR 1955 37.750000 SITE LATITUDE DEG (AL1) ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01 SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 66521.000000 FLOOR AREA (SQFT) 5795.000000 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 272020.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -334850.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 57950.000000 435.000000 CONSTANT INFILTRATION RATE CFM (CFMI) INFILTRATION PROFILE .850 .850 1.00 .850 .850 .850 .850 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 .850 .850 .850 .850 .850 1.00 .850 1.00 A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
3.920000E-01
2.165000E-02
8.330000E-03
69132.000000 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 288.000000 PARTITION UA BTU/HR-F (GUA) 0.000000E+00 DOOR UA BTU/HR-F (DUA) 49.200000
WINDOW GLASS NUMBER (NG) 30 WINDOW GLASS NUMBER (NG) DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01 WINDOW SHADING FACTOR (SHD) 6.200000E-01

	WALL DAT	Ά		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	1000.0	849.0	1039.0	482.0
WINDOW AREA SQFT (AWND)	135.0	90.0	180.0	105.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	13.5	9.0	18.0	10.5
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HOT ARY WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.245	. 243	.244	. 2 7 7	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	01027	01022	01929	01829	
CN FACTORS	.01837	.01022	.01029	.01029	
NUMBER OF BN FACTORS (NB	5	5	5	3	
BN FACTORS BN (BN)		00000	00003	00003	
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00280	.00281	.00261	
N=3	.01017	.01008	.01012	.01012	
N=4	.00498	.00494	.00496	.00496	
N=5	.00037	.00036	.00036	.00036	
N=6	*****	*****	*****	****	
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS					
N=1	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N-6	*****	*****	*****	*****	
DOOR ADEA COMP (ADOR) 5795	i naanaa				
ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	(F) 5.50	0000E-02			
POOF TRANS FUNCTIONS USED (1=Y	ES. O=NO)	(IROOF)	1		
BOOF C TRANSFER FUNCTION (CNR)	1.0470	14E-02			
BOOD D MOINCERD BINCHTONS / BNL	<i>)</i>				
.106E-04 .156E-02 .582E-02	287E-02	.212E-03	.106E+04		
DOOR D BOANCERD BINCETONS (DNE) \				
1.00 -1.18 .410	- 444E-01	500E-03	999		
SKYLIGHT TILT DEGREES (TILT)	0 000000	1500E 00	,,,,,		
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	7.75%	0000 nnr	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	OOOOOOELOO	۱ کان کان کان	,000		
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	00000000	,			
SKYLIGHT WIDTH FT (SKW) 0.0	100000E+00	200000=100			
SKYLIGHT OVERHANG WIDTH FT (SP	(OW) U.(JUUUUUUE+UU			
OVERHANG HEIGHT ABOVE SKYLIGHT					
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY)	1				
SKYLIGHT SHADING COEFFICIENT	(SHSK) (0.00000E+C	00		
SUMMER START MONTH AND DAY FOR	R SHSK (MS)	r, NDST)		1	
SUMMER END MONTH AND DAY FOR S	SHSK (MND, 1	NDND)	1	7	
SKY LIGHT AREA SQFT (ASKY)	0.00000E	+00			
DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT-H	R-F (SKYU)) 1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT	r-hr-f (SK)	YUN)	1.292998		
FRACTION OF PROCESS HEAT TO IT	ATEKNAT DEY	ACE (FAP)	3.400000)E-01	
WEEKEND COOLING THERMOSTAT PRO	OFILE				
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
78.0 78.0 78.0	78.0	78.0	78.0	78.0	78.0
70.0					
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
30.0 30.0 30.0	,,,,				
WEEKEND HEATING THERMOSTAT PRO	יייי ארד.די				
	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	33.0	23.0			
60.0 60.0 60.0	68.0	68.0	68.0	68.0	68.0
68.0 68.0 68.0	00.0	00.0	00.0	55.5	
FF 0 FF 0 FF 0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.5

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
PEAK VAL 11. 11645. 17150. 10850. HOUR --- HOURLY FRACTION OF PEAK ----
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 9430.000000
ECONOMIZER HIGH TEMP LIMIT F 72.000000
                                   0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.250000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 274000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 342500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
        .191 .200 .286 .300 .369
                                                             .400
                                                                        .451
 .100
                                         .700 .718
                                                                        .812
       .537
                                                              .800
                                .625
 .500
                     .600
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 360000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 82936.000000
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                              .000 .000 .000 .000 .000
         .000 .000
  .000
  .000 .000 .000 .000 .000 .000
  .000 .000 .000
```

BLDG 625 - BATTALION HQ ECONOMIZER (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTITM DOOR AND			VENT AND	
MNTH	LOAD	GAIN	WINDOW	ROOF	SLAB .00		• 01	.00 .00	LATENT .00
Orm	-57.15	LOSS		-7.43	-6.91	.00	-12.52	-5.50 -55.40	.00
_		GAIN LOSS	9.01	.00 -6.11	.00 -5.88	.00	.17 -9.11	.00 .00 -4.70 -47.21	.00
		GAIN LOSS	11.47	.06 -5.59	.00 -5.59	.00	1.02 -7.33	.00 .03 -4.46 -43.86	.00
		GAIN LOSS	11.75	.31 -3.63	.03 -3.64	.00	2.37 -3.88	.03 .25 -2.92 -27.59	1.05 .00
MAY	16.03 59		12.85	.63 -2.82	.07 -2.79	.00	3.83 -2.50	.06 .45 -2.15 -19.78	4.71 .00
JUN	42.14 .00		13.02	1.04 -1.92	.25 -1.75		5.50 -1.19	.20 1.61 -1.35 -12.49	17.61 .00
JUL		GAIN LOSS	13.16		.70 -1.40	.00	7.09 80	.56 4.73 -1.09 -10.03	17.57 .00
AUG		GAIN LOSS	11.68		.53 -1.45	.00	5.93 92	.41 3.42 -1.12 -9.62	18.20 .00
SEP	26.52 88		9.84	.60 -2.50	.28 -2.19		3.71 -2.14	.23 1.99 -1.72 -15.98	11.24
OCT	4.62 -8.04		8.45	.13 -3.91	.06 -3.43	.00	1.40 -4.45	.05 .39 -2.67 -24.26	1.67 .00
	.54 -24.19				.00 -4.53	.00	.39 -7.21	.00 .01 -3.54 -33.29	.23
DEC	.00 -56.08	GAIN LOSS	6.26	.00 -7.33	.00 -6.70	.00	.05 -12.54	.00 .01 -5.27 -52.63	.00
TOT	197. -232.	GAIN LOSS	121.	6. -50.	2. -46.	0.	31. -65.	2. 13. -36352.	72. 0.
MAX MAX	HEATING COOLING	LOAD=	: −27 : 33	2020. I	BTUH ON BTUH ON	DEC 31 SEP 12	HOUR 9	AMBIENT TE AMBIENT TE	MP 38. MP 72.

ZONE UA BTU/HR-F 1506.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-3.I

BLDG 625 - BATTALION HQ ECONOMIZER (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	PERAT	SPACE URE F MIN	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	62.	74.	54.	4 29	17 6		3.32	8.23	4.22	22.94
FEB	63.	73.	54.	13 2	17 6		2.95	7.32	3.81	20.46
MAR	65.	79.	54.	12 4	17 6		3.26	8.08	4.22	22.60
APR	71.	81.	55.	30 9	21 6		3.14	7.77	4.08	21.77
MAY	76.	82.	61.	29 11	21 6		3.32	8.23	4.22	22.94
JUN	79.	83.	73.	30 17	23 6		3.14	7.77	4.08	21.77
JUL	81.	86.	74.	16 24	2		3.26	8.08	4.22	22.60
AUG	80.	83.	72.	12 25	23 7		3.32	8.23	4.22	22.94
SEP	76.	83.	62.	2 15	23 7		3.08	7.62	4.08	21.42
OCT	71.	80.	55.	4 28	20 7		3.32	8.23	4.22	22.94
NOV	66.	79.	54.	8	16		3.20	7.93	4.08	22.11
DEC	62.	71.	54.	12 18	17 6		3.20	7.93	4.22	22.25
YEAR							38.54	95.41	49.64	266.75

BLDG 625 - BATTALION HQ ECONOMIZER (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

монтн	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF LOADS WEI HEATING O	'	MAXIMUM BTU HEATING	
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	438 326 255 103 9 0 0 13 85 224 435 1888	0 0 56 163 261 280 277 168 45 6 0	72 57 38 12 0 0 0 7 31 74 291	0 0 0	2720E+06 2720E+06 2720E+06 2720E+06 1881E+06 .0000 .0000 1764E+06 2720E+06 2720E+06 2720E+06	.0000 .0000 .6870E+05 .1531E+06 .2531E+06 .3251E+06 .3349E+06 .3349E+06 .2928E+06 .1127E+06 .0000
YEAR	1000	1202	271	•		

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	79.07	.00	3.32	8.23	1.24	22.94	12.6
FEB	59.74	.00	2.95	7.32	1.12	20.46	12.6
MAR	44.08	.01	3.26	8.08	1.24	22.60	18.7
APR	15.37	.37	3.14	7.77	1.20	21.77	23.0
MAY	1.06	1.23	3.32	8.23	1.24	22.94	30.8
JUN	.00	3.05	3.14	7.77	1.20	21.77	34.4
JUL	.00	3.83	3.26	8.08	1.24	22.60	36.0
AUG	.00	3.59	3.32	8.23	1.24	22.94	36.0
SEP	1.49	1.92	3.08	7.62	1.20	21.42	36.0
OCT	12.24	.35	3.32	8.23	1.24	22.94	33.7
NOV	35.25	.04	3.20	7.93	1.20	22.11	21.2
DEC	77.93	.00	3.20	7.93	1.24	22.25	12.6
YEAR	326.21	14.40	38.54	95.41	14.55	266.75	36.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 112498. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-3.I

BLDG 625 - BATTALION HQ ECONOMIZER (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AMBT. DEG.	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	WHEN LOADS MET HEAT	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	2720E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	2720E+06
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.6870E+05	2720E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1531E+06	2720E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.2531E+06	1881E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.3251E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.3349E+06	.0000
AUG		1784.	1.000	76.	0.	0.	0	0	.3349E+06	.0000
SEP			1.000	68.	0.	٥.	0	0	.3349E+06	1764E+06
			1.000	57.	0.	0.	0	0	.2928E+06	2720E+06
OCT			1.000	47.	0.	0.	0	0	.1127E+06	2720E+06
NOV				35.	0.	0.	0	0	.0000	2720E+06
DEC	856.	586.	1.000	25.	٠.	٠.	•	_		

BLDG 625 - BATTALION HQ OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
 ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 WEEKEND INTERNAL GAINS FACTOR (WKEND) 5.000000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS). 1
 SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NIMBER OF ZONES (NZ) 1
 NUMBER OF ZONES (NZ)
 WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
   FILE NAME MO
 STATION 13995
                                         YEAR 1955
 SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.80000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 SOLAR REFLECTANCE OF GROUND (RING)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

70.000000

70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 66521.000000
 FLOOR AREA (SQFT) 5795.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 272020.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -334850.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 57950.000000
 CONSTANT INFILTRATION RATE CFM (CFMI)
                                                                                                          435.000000
 INFILTRATION PROFILE
                                                    .000
                                                                             .000 .000 .000
                                                                                                                                                                                 1.00
                           .000
    .000
   1.00 1.00 1.00 1.00 1.00 1.00
                                                                                                                                                                                    1.00
                                                                                                                                                          .000
                                                                                                                                                                                  .000
                                                                                                                               .000
                                                                            .000 .000
                 .000 .000
    .000
 A FACTOR IN INFILTRATION EQUATION (CINA) 3.920000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 69132.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 288.00000
                                                                                                    288.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 49.200000
WINDOW GLASS NUMBER (NG) 30
 WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
                                                                                     WALL DATA
WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

1 2 3 4
4
2 0 90.00
180.00 -90.00
180.00 105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00
105.00

                                                                                                                2
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.243	. 244	. 244
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	01027	01822	01829	.01829
CN FACTORS	.01037	.01022	5	5
NUMBER OF BN FACTORS (ND	3	J	Ū	Ū
BN FACTORS BN (BN)	. 00003	-00003	.00003	.00003
N=3	.00283	.00280	.00281	.00281
N=2	.01017	.01008	.01012	.01012
N-0	.00498	.00494	.00496	.00496
N-2	.00037	.00036	.00036	.00036
N-6	*****	*****	*****	*****
NUMBER OF BN FACTORS (ND BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS				
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	****
*PD\$ CODE (\$POE) 5705	000000			
ROOF AREA SQF1 (AROF) ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	F) 5.50	0000E-02		
ROOF TRANS FUNCTIONS USED (1=Y)	ES, O=NO	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	1.0470	14E-02		
TAAT D MONNEEDD WINCHIONS INNE	1			
.106E-04 .156E-02 .582E-02	.287E-02	.212E-03	.106E+04	
DOOR D TRANSFER FUNCTIONS (DNR	1			
1.00 -1.18 .410	444E-U1	.500E-03	999.	
SKYLIGHT TILT DEGREES (TILT)	(3.70%)	0000 000	000	
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	,	000	
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	,		
SKYLIGHT WIDTH FT (SKW) U.U	OM) O	000000#+00		
SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT	EM (SKUH)	0000	00E+00	
SKYLIGHT GLASS NUMBER (NS)	1	0.000	002.00	
SKYLIGHT GLASS NUMBER (NS)	פחפגו ַ (OCCOOR+0	0	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S	SHSK (MST	'.NDST)	1	1
SUMMER SIRKI MONTH AND DAY FOR S	HSK (MND.N	IDND I	1	1
SOUTH FIND MONTH WAS DATE FOR S	0.00000E+	-00	_	
DYALIME CAN TIGHT II BAII\CULT-H	R-F (SKYII)	1.	292998	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	(UN)	1.292998	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	3.400000	E-01
TIMOTION OF THOOPIN HILL TO TH		, ,		

-----INTERNAL GAINS AND PROFILES ------

THERMOSTAT SET POINT DEG F

	KW -		BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	ENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	11.	11645.	17150.	10850.		
HOUR	HC	URLY FRACT	ION OF PE			
1	.100	.000	.000	.000	70.0	76.0
2	.100	.000	.000	.000	70.0	76.0
3	.100	.000	.000	.000	70.0	76.0
4	.100	.000	.000	.000	70.0	76.0
5	.100	.000	.000	.000	70.0	76.0
6	.100	.000	.000	.000	70.0	76.0
7	.800	.500	.800	.800	70.0	76.0
8	1.000	.800	1.000	1.000	70.0	76.0
9	1.000	.900	1.000	1.000	70.0	76.0
-		.900	1.000	1.000	70.0	76.0
10	1.000			.800	70.0	76.0
11	.800	.800	.800			76.0
12	.500	.500	.400	.400	70.0	70.0

21 22 23	1.000 1.000 1.000 1.000 .200 .100 .100	.000 .000	1.000 1.000 1.000 1.000 .100 .000 .000	1.000 1.000 1.000 1.000 .100 .000 .000	70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0	76 76 76	.0 .0 .0 .0 .0 .0 .0
NO COOL	ING ABOVE AME	IENT TEMP.	OF (TCLK	эт) 6	55.000000		
CVCTTM 1	ישסעי (דוגיטאו	2					
SUPPLY A	AIR CFM (SACE	M) 9430	.000000	00000			
ECONOMIZ	ER HIGH TEMP	LIMIT F	0.00	00000			
SYSTEM S	SUPPLY AIR ST	WEL TIME D	24	.000000			
SISTEM S	SUPPLY AIR ST	P(TMXAIR)	55.0	00000			
MIN OUTS	SIDE AIR FRAC	TION OF SAC	CFM (OAFR	1.000	000E-01		
FAN EFFI	CIENCY (EFAN	5.5000	000E-01				
TAN TOTA	T. PRESSURE I	N. WATER	(DP) 8	.250000E-0)1		
HEATING	PLANT RATED	OUTPUT BTU	(HFLOT)	274000.00	00000		
HEATING	PLANT RATED	INPUT BTU	(HFLIN)	342500.00)UUUU		
HEATING	PLANT PART L	OAD VS FRAC	OF INPU	3UU T. TWDFF (1	369	. 400	.451
.100	.191	.200	.200	.300	.305	. 400	* * * * * * * * * * * * * * * * * * * *
.500	.537	.600	.625	.700	.718	.800	.812
. 900	.906	1.00	1.00				
			A				
COOLING	DIANT RATED	OUTPUT BTU	(CFLOT)	360000.0	00000		
COOLING	PLANT RATED	INPUT BIU ((CELLIN)	02930.00	,0000		
COOLING	PLANT PART L	OAD FRAC V	OOO	OOO (F	-000	.000	.000
.000	.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000				

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-4.I

BLDG 625 - BATTALION HQ OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

		SOLAR		PARTIT DOOR				VENT	
		THRU		AND	D.C.V.	5.73 T T	MENDON	AND	T.ATENT
MNTH LOAD JAN .00		WINDOW	ROOF	SLAB	RSMI	WALL	MTMDOM	.00	.00
JAN .00	GAIN	7.16	.00	.00	.00	-17.31	-7 07	-66.17	.00
-78.60	LOSS		-9.29	-8.69	.00	-17.31	7.07	00.17	
	CATN	0.01	00	00	- 00	.05	.00	.00	.00
FEB .00 -60.65		9.01	-7.66	-7.52	.00	-12.99	-6.00	-56.00	.00
-60.65	LOSS								
MAR .77	CATN	11.47	.04	.00	.00	.74	.00	.00	.00
	LOSS		-6.90	-6.99	.00	-10.45	-5.57	-50.59	.00
401.0									
APR 9.64	GAIN	11.75	.31	.04	.00	2.32 -5.17	.03	.27	1.68
-17.15	LOSS		-4.14	-4.17	.00	-5.17	-3.33	-28.42	.00
								0.2	6 43
MAY 24.35		12.85	.75	.14	.00	4.36	• 11	.83	.00
-1.85	LOSS		-2.62	-2.52	.00	-2.22	-1.94	-10.58	.00
				40	00	6.69	32	2 53	24.10
JUN 58.23		13.02	1.28	.40	.00	64	_ 91	-7 64	.00
.00	LOSS		-1.48	-1.19	.00		• • •	,.04	
00 66	CATN	12 16	1 03	1.02	. 00	9.02	.82	6.54	32.93
JUL 80.66	LOSS	13.10	-1.95	73	.00	31	57	-4.67	.00
•00	TOSS		1.00	• , •					
AUG 75.26	GATN	11.68	1.54	.77		7.55	.60	4.72	32.87
.00			-1.17	81	.00	37	62	-4.47	.00
SEP 41.21	GAIN	9.84	.71	.39	.00	4.38	.32	2.66	18.51
-2.83	LOSS		-2.29	-1.96	.00	-1.98	-1.54	-12.52	.00
						1.29	0.5	40	2 50
OCT 8.06	GAIN	8.45	.13	.06	.00	1.29 -5.65	.05	.4U	2.50
-14.58	LOSS		-4.42	-3.97	.00	-5.65	-3.09	-25.51	.00
			00	00	00	.30	00	.00	. 38
NOV 1.21		6.72	.00	-5.73		-10.01	-4.47	-38.64	.00
-36.71									
DEC .00 -76.91	CATN	6 26	00	00	- 00	.01	.00	.00	.00
DEC .00	TOCC	0.20	-9 22	-8.70	.00	-17.38	-6.85	-63.28	.00
TOT 299.	CATN	121.	7.	3.	0.	37.	2.	18.	119.
-336	LOSS		-56.	-53.	0.	-84.	-42.	-374.	0.
550.									
MAX HEATING	LOAD=	-27	2020. 1	BTUH ON	DEC 18	HOUR 8	AM	BIENT TE	MP 1.
MAX HEATING	LOAD=	28	0783.	BTUH ON	JUL 27	HOUR 15	AM	RIEML LE	MP 92.

ZONE UA BTU/HR-F 1506.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-4.I

BLDG 625 - BATTALION HQ OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

									FAN	TOTAL
MONTH	INTE	RNAL S PERATI MAX		DAY	_	COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	76.	69.	4 27	17 6		3.32	8.23	4.22	22.94
FEB	70.	75.	69.	13 2	17 6		2.95	7.32	3.81	20.46
MAR	71.	77.	69.	12 4	15 6		3.26	8.08	4.22	22.60
APR	73.	78.	69.	30 9	16 6		3.14	7.77	4.08	21.77
MAY	75.	78.	69.	15 11	15 6		3.32	8.23	4.22	22.94
JUN	76.	78.	72.	27 17	15 6		3.14	7.77	4.08	21.77
JUL	77.	78.	73.	3 10	15 6		3.26	8.08	4.22	22.60
AUG	77.	78.	71.	30 25	14 7		3.32	8.23	4.22	22.94
SEP	75.	78.	69.	11 15	15 6		3.08	7.62	4.08	21.42
OCT	73.	78.	69.	5 28	15 6		3.32	8.23	4.22	22.94
NOV	71.	77.	69.	8 3	16 6		3.20	7.93	4.08	22.11
DEC	70.	73.	68.	12 18	17 6		3.20	7.93	4.22	22.25
YEAR							38.54	95.41	49.64	266.75

BLDG 625 - BATTALION HQ OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING		OURS WHEN	MAXIMUM BTU	
		INCLUDING		NOT MET	HEATING	COOLING
MONTH	HEATING	ECONOMIZER	HEATING CO	OLING	HEALING	COODING
	671	0	1	0	2720E+06	.0000
JAN	674	_	_	-	2257E+06	.0000
FEB	554	0	U	Ō		
MAR	501	24	0	0	2277E+06	.9980E+05
	252	146	0	0	1425E+06	.1516E+06
APR	_,		=	Õ	9629E+05	.1945E+06
MAY	38	321	Ō	-		
JUN	0	484	0	0	.0000	.2574E+06
JUL	Ō	601	0	0	.0000	.2808E+06
	_		Ö	Ó	.0000	.2584E+06
AUG	0	583	_			.2445E+06
SEP	66	353	0	0	9263E+05	
OCT	255	118	0	0	1323E+06	.1829E+06
	461	31	0	0	1918E+06	.1254E+06
NOV			=	ŏ	2720E+06	.0000
DEC	705	0	8		•	
YEAR	3506	2661	9	0	2720E+06	.2808E+06

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	110.27	.00	3.32	8.23	1.24	22.94	12.6
FEB	86.34	.00	2.95	7.32	1.12	20.46	12.6
MAR	69.15	.07	3.26	8.08	1.24	22.60	20.5
APR	28.30	.80	3.14	7.77	1.20	21.77	23.5
MAY	3.55	1.90	3.32	8.23	1.24	22.94	26.4
JUN	.00	4.35	3.14	7.77	1.20	21.77	31.1
JUL	.00	6.06	3.26	8.08	1.24	22.60	32.8
AUG	.00	5.67	3.32	8.23	1.24	22.94	31.2
SEP	5.75	3.13	3.08	7.62	1.20	21.42	29.9
OCT	25.77	.65	3.32	8.23	1.24	22.94	25.6
NOV	57.32	.10	3.20	7.93	1.20	22.11	21.9
DEC	109.81	.00	3.20	7.93	1.24	22.25	12.6
YEAR	496.27	22.74	38.54	95.41	14.55	266.75	32.8

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 146758. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-4.I

BLDG 625 - BATTALION HQ OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	2720E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	2257E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.9980E+05	2277E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1516E+06	1425E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.1945E+06	9629E+05
JUN	2567.	1933.	1.000	72.	ο.	0.	0	0	.2574E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.2808E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.2584E+06	.0000
SEP	1800.	1330.	1.000	68.	ο.	0.	0	0	.2445E+06	9263E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.1829E+06	1323E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.1254E+06	1918E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	2720E+06

BLDG 625 - BATTALION HQ OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 5.000000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
                                  9.700000E-01
SKY CLEARNESS FACTOR (CLN)
                                  1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
---- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                  YEAR 1955
                                  37.750000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
                                                          20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
                                                        70.000000
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                      70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS)
                                           66521.000000
FLOOR AREA (SQFT) 5795.000000
                                                    272020.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX)
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -334850.000000
COND RETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 57950.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA)
CONSTANT INFILTRATION RATE CFM (CFMI)
                                                435.000000
INFILTRATION PROFILE
                                                                                .000
                                                                     1.00
                                                         1.00
                                   1.00
                                             1.00
            1.00
                       1.00
 1.00
                                                         .000
                                                                     .000
                                                                                .000
                                   .000
                                             .000
            .000
                       .000
 .000
                                                                                1.00
                                                                     1.00
                                   1.00
                                              1.00
                                                          1.00
                        1.00
 1.00
            1.00
                                                  3.920000E-01
A FACTOR IN INFILTRATION EQUATION (CINA)
                                               2.165000E-02
8.330000E-03
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP) 69132.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 288.0000
                                                288.000000
                                  0.00000E+00
PARTITION UA BTU/HR-F (GUA)
                                49.200000
DOOR UA BTU/HR-F (DUA)
WINDOW GLASS NUMBER (NG)
                                      30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

	WALL DAT	Α		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	1000.0	849.0	1039.0	482.0
WINDOW AREA SQFT (AWND)	135.0	90.0	180.0	105.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	13.5	9.0	18.0	10.5
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ARV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.243	.244	.244
WALL TRANSFER FUNCTIONS				
CN FACTORS	.01837	.01822	.01829	.01829
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	5	5	5	5
BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6				00000
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00280	.00281	.00281
N=3	.01017	.01008	.01012	.01012
N=4	.00498	.00494	.00496	.00496
N=5	.00037	.00036	.00036	.00036
N=6	*****	******	********	****
NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS			1 00000	1 00000
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.05054	07415
N=4	07415	07415	07415	0/415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	****
ROOF AREA SQFT (AROF) 5795	.000000	00007 00		
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y	F) 5.50	(17000E-02	-	
ROOF TRANS FUNCTIONS USED (1=Y	ES, U=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR	1.04/0	14E-02		
ROOF B TRANSFER FUNCTIONS (BNR)	2125-02	1068404	
.106E-04 .156E-02 .582E-02	.28/E-02	.212E-03	.100E+04	
ROOF D TRANSFER FUNCTIONS (DNR	.)	E00E-03	000	
1.00 -1.18 .410	444E-U1	*200F-02	333.	
SKYLIGHT TILT DEGREES (TILT)	(77CY)	0000 NNN	000	
SKYLIGHT AZIMUTH ANGLE DEGREES	$(\mathbf{w}_{\mathbf{p}})$	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00			
SKYLIGHT WIDTH FT (SKW) U.U	OOOOOE+OO	00000E+00		
SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT	ער (פעטע)	0000	00E+00	
OVERHANG HEIGHT ABOVE SKILIGHT	1	0.0000	001.00	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	cnck) U	000000000000000000000000000000000000000	0	
SKYLIGHT SHADING COEFFICIENT (SHSK (MST	NDST)	1	1
SUMMER START MONTH AND DAY FOR S	HSK (MND.N	ו מאמו	1	1
SUMMER END MONIU MAD DAI LOW S	0.000000E+	-00		
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	R-F (SKYII)	1.	292998	
NICHT TIME SKYLIGHT II RTII/SOFT	-HR-F (SKY	UN)	1.292998	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	3.400000	E-01
ELWCTION OF ELOCHOR HENT TO IN		(/		

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	11.	11645.	17150.	10850.		
HOUR	HC	URLY FRACT	TION OF PE			
1	.100	.000	.000	.000	70.0	76.0
2	.100	.000	.000	.000	70.0	76.0
3	.100	.000	.000	.000	70.0	76.0
4	.100	.000	.000	.000	70.0	76.0
5	.100	.000	.000	.000	70.0	76.0
6	.100	.000	.000	.000	70.0	76.0
7	.800	.500	.800	.800	70.0	76.0
8	1.000	.800	1.000	1,000	70.0	76.0
9	1.000	.900	1.000	1.000	70.0	76.0
-	1.000	.900	1.000	1.000	70.0	76.0
10		.800	.800	.800	70.0	76.0
11	.800			.400	70.0	76.0
12	.500	.500	.400	. 400	70.0	,0.0

```
.800
                                                                    76.0
             .800
                       .800
                                            .800
                                                        70.0
  13
                                                                    76.0
                        .900
                                                        70.0
                                 1.000
                                           1.000
            1.000
  14
                                                                    76.0
                                                        70.0
            1.000
                        .900
                                 1.000
                                           1.000
  15
                                                        70.0
                                                                    76.0
                                           1.000
                                 1.000
  16
            1.000
                       .900
                                                                    76.0
                       .800
                                 1.000
                                           1.000
                                                        70.0
            1.000
  17
                                                                    76.0
             .200
                                            .100
                                                        70.0
                       .200
                                 .100
  18
                                                        70.0
                                                                    76.0
                                            .000
             .100
                                  .000
                       .000
  19
                                            .000
                                                                    76.0
                                                        70.0
                                  .000
                        .000
             .100
  20
                                                                    76.0
                                                        70.0
                                            .000
                        .000
                                  .000
             .100
  21
             .100
                                                        70.0
                                                                    76.0
                                  .000
                                            .000
                        .000
  22
                                            .000
                                                                    76.0
                                                        70.0
             .100
                        .000
                                  .000
  23
                                                                    76.0
                                                         70.0
                                            .000
                                  .000
  24
             .100
                        .000
                                               65.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
                                                65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
SYSTEM TYPE, (IECN)
                          9430.000000
SUPPLY AIR CFM (SACFM)
                                    68.000000
ECONOMIZER HIGH TEMP LIMIT F
                                    0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
                                      24.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                   55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                            1.000000E-01
                        5.500000E-01
FAN EFFICIENCY (EFAN)
                                       8.250000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
HEATING PLANT RATED OUTPUT BTU (HFLOT) 274000.000000
HEATING PLANT RATED INPUT BTU (HFLIN)
                                         342500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                               .400
                                                                         .451
                                                    .369
                               .286
                                          .300
                     .200
           .191
                                                                         .812
                                          .700
                                                               .800
                                                    .718
 .500
                      .600
                                .625
           .537
                                1.00
                     1.00
 .900
           .906
CHILLER TYPE (ITYPCH)
                                4
                                          360000.000000
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                          82936.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                         .000
                                                    .000
                                                               .000
                     .000
                                .000
                                          .000
           .000
 .000
                                                               .000
                                                                         .000
                                                    .000
                                .000
                                          .000
                     .000
 .000
           .000
                                .000
 .000
           .000
                     .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-5.I

BLDG 625 - BATTALION HQ OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

					PARTIT				VENT	
			SOLAR		DOOR AND					
	TOND		THRU	POOF	and Slab	BSMT	WAT.T.	WINDOW	INFL	LATENT
MNTH	LOAD	CRIN	WINDOW	1001	200	-00	<u> </u>	. กก	. 00	- 00
JAN	.00	GAIN	7.16	_0.00	.00 -8.89	00	-17.31	-7.07	-70.18	.00
		LOSS								
ЯЯЯ	.00	GAIN	9.01	.00	.00	.00	.05	.00	.00	.00
	-64.09	LOSS		-7.67	-7.53	.00	-13.00	-6.01	-59.40	.00
		··	11 47	0.4	.00 -6.99	00	74	. 00	.00	.00
MAR	.79	GAIN	11.4/	.04	-6 00	.00	-10 45	-5.57	-54.05	.00
	-49.87									
APR	9.43	GAIN	11.75	.31	.04	.00	2.33	.03	.24	1.58
	-19.34			-4.12	-4.15	.00	-5.13	-3.31	-30.81	.00
						00	4 40	11	71	5 78
MAY			12.85	.75	.14 -2.47	.00	2.40	-1.00	_10 20	00
	-2.60	LOSS		-2.58	-2.47	.00	-2.13	-1.90	-10.20	.00
~****	EE 04	CATN	12 02	1 28	.40 -1.16	. 00	6.73	.32	2.22	22.80
JUN	.00	GAIN	13.02	-1 46	-1.16	.00	60	89	-8.58	.00
	.00	TOSS		-1.40						
.TIIT.	80.36	GAIN	13.16	1.93	1.02	.00	9.03	.82	5.99	33.74
COD		LOSS			72	.00	29	56	-5.31	.00
									4 00	22.02
AUG	74.31	GAIN	11.68	1.54	.77	.00	7.57	.60	4.28	33.03
	01	LOSS		-1.15	79	.00	35	61	-5.23	.00
CED	20 90	CATN	0 84	. 71	.39	.00	4.39	.32	2.35	17.78
SEP	-3.91	TOSS	9.04	-2 27	-1.94	.00	-1.93	-1.52	-14.11	.00
ОСТ	7.57	GAIN	8.45	.13	.06	.00	1.30	.05	.33	2.31
		LOSS		-4.40	-3.96	.00	-5.61	-3.08	-27.82	.00
							20	00	00	25
NOV	1.20	GAIN	6.72	.00	.00	.00	.30 -9.99	.00	41 72	.35
	-39.78	LOSS		-6.20	-5.72	.00	-9.99	-4.46	-41.72	.00
556	00	CATM	6 26	00	.00 -8.69	. 00	. 01	.00	.00	.00
DEC	.00	CAIN	0.20	-9 21	-8.69	.00	-17.35	-6.84	-67.27	.00
тот	292.	GAIN	121.	7.	3. -53.	0.	37.	2.	16.	117.
	-360.	LOSS		-56.	-53.	0.	-84.	-42.	-403.	0.
			. -			DEG 10	HOUR O	n Mil	מד האים אם	MP 3.
MAX	HEATING	LOAD=	-27	2020.	BTUH ON BTUH ON	DEC 18	HOUR 9	AME	TENT TE	MP 93.
MAX	COOLING	LOAD=	28	2976.	RIOH ON	10T 56	HOOK I/	WIJE	TENT TE	rie 33+

ZONE UA BTU/HR-F 1506.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-5.I

BLDG 625 - BATTALION HQ OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

									FAN	TOTAL
MONTH	INTE	PERAT	SPACE URE F MIN	DAY	_	OIN- CIDENT AMBT.	LIGHTING · THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	76.	67.	4 27	17 6	62. 4.	3.32	8.23	4.22	22.94
FEB	70.	75.	69.	13 2	17 6	64. 14.	2.95	7.32	3.81	20.46
MAR	71.	77.	69.	12 4	16 6	69. 15.	3.26	8.08	4.22	22.60
APR	73.	78.	69.	30 9	16 6	84. 30.	3.14	7.77	4.08	21.77
MAY	75.	78.	69.	15 11	15 6	80. 39.	3.32	8.23	4.22	22.94
JUN	76.	78.	71.	27 17	15 6	89. 57.	3.14	7.77	4.08	21.77
JUL	77.	78.	72.	3 10	15 6	90. 60.	3.26	8.08	4.22	22.60
AUG	76.	78.	70.	30 25	14 7	87. 55.	3.32	8.23	4.22	22.94
SEP	75.	78.	69.	11 15	15 6	86. 39.	3.08	7.62	4.08	21.42
OCT	73.	78.	69.	5 28	15 6	73. 33.	3.32	8.23	4.22	22.94
NOV	71.	77.	69.	8 3	16 6	75. 18.	3.20	7.93	4.08	22.11
DEC	70.	73.	65.	12 18	16 6	59. 0.	3.20	7.93	4.22	22.25
YEAR							38.54	95.41	49.64	266.75

BLDG 625 - BATTALION HQ OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF LOADS WER	HOURS WHEN E NOT MET	MAXIMUM FTG	
MONTH	HEATING	ECONOMIZER	HEATING C	OOLING	HEATING	COOLING
JAN	668	1	10 0	0	2720E+06	.0000
FEB MAR	547 492	23	Ö	Ō	2543E+06 1617E+06	.1004E+06
APR MAY	253 48	140 297	0	0	1113E+06	.1888E+06
JUN JUL	0 0	463 585	0 0	0 0	.0000	.2830E+06
AUG SEP	1 75	564 345	0	0 0	-9340. 1077E+06	.2476E+06
OCT	256	114 32	0	0	1510E+06 2174E+06	.1715E+06
NOV DEC	4 57 691	0	13	Ō	2720E+06	.0000 .2830E+06
YEAR	3488	2564	23	0	Z / Z UE T UO	.20JUE+00

SYSTEM TOTALS

		ENERG	Y CONSUMPT			OTAL INTERNAL	MAXIMUM
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH		KWH	KWH	BTU	KWH	BTU	KW
JAN	114.68	.00	3.32	8.23	1.24	22.94	12.6
FEB	89.98	.00	2.95	7.32	1.12	20.46	12.6
MAR	72.59	.07	3.26	8.08	1.24	22.60	20.5
APR	30.64	.78	3.14	7.77	1.20	21.77	23.2
MAY	4.77	1.80	3.32	8.23	1.24	22.94	26.0
JUN	.00	4.17	3.14	7.77	1.20	21.77	30.3
JUL	.00	6.00	3.26	8.08	1.24	22.60	33.0
AUG	.07	5.56	3.32	8.23	1.24	22.94	30.4
SEP	7.21	3.01	3.08	7.62	1.20	21.42	29.7
OCT	28.21	.62	3.32	8.23	1.24	22.94	24.8
NOV	60.42	.10	3.20	7.93	1.20	22.11	21.7
DEC	113.74	.00	3.20	7.93	1.24	22.25	12.6
YEAR	522.31	22.12	38.54	95.41	14.55	266.75	33.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 150884. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 625-5.I

BLDG 625 - BATTALION HQ OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

MONTE	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.	MAX SYS TEMP. I DEG.	DRIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	2720E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	2529E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.1004E+06	2543E+06
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.1465E+06	1617E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.1888E+06	1113E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2462E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.2830E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.2476E+06	-9340.
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.2385E+06	1077E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.1715E+06	1510E+06
NOV	1008.	710.	1.000	47.	ο.	0.	0	0	.1210E+06	2174E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	2720E+06

COMPUTER SIMULATIONS

BUILDING 630

EMC ENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

05-Mar-93

DATE:

630Z1

BUILDING NO.: BLDG. TYPE:

MESS HALL (KITCHEN)

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1782.3	1654.1	1548.9		1743.9	1760.4
COOLING (kWH)						

SUPPLY AIR FAN	16500 CFM
FLOOR AREA	3801 FT ²
CFMI	357 CFM
UA	1480 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	DDC CONTROL					
RUN3	ECONOMIZER					
RUN4	NIGHTIME INFILTRATION (OA)					
RUN5	DAYTIME INFILTRATION (OA)					

HOURS OF OCCUPANCY				ANNUAL HEATING & COOLING HOURS	
M-F	300	2000	85 HR	HR. ON HEATING	3094 HR/YR
SAT.	300	2000	17 HR	HR. ON COOLING	2074 HR/YR
	300	2000	17 HR	HR. OFF HEATING	1274 HR/YR
SUN.	TOTAL OCCUPY HR.		119 HR/WK	HR. OFF COOLING	854 HR/YR
	TOTAL UNOCC. HR.		49 HR/WK		
	ANNUAL OCCUPY HR.		6205 HR/YR		
		ANNUAL UNOCC. HR.		7	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 3094 = 1274 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 2074 = 854 HR/YR

HOAUHC	1782.3 MBtu -	1743.9 MBtu	=	4.21E+01 Btu/CFM-HR	
	357 CFM *	2555 HR/YR			
HOAUH	1782.3 MBtu -	1743.9 MBtu	=	8.44E+01 Btu/CFM-HR	
1	357 CFM *	1274 HR/YR			
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	357 CFM *	2555 HR/YR			
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	357 CFM *	854 HR/YR			
HOAOHC	1782.3 MBtu -	1760.4 MBtu	=	9.89E+00 Btu/CFM-HR	
	357 CFM *	6205 HR/YR			
НОАОН	1782.3 MBtu -	1760.4 MBtu	=	1.98E+01 Btu/CFM-HR	
	357 CFM *	3094 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
\$57.13.13	357 CFM *	6205 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	357 CFM *	2074 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
DC DEMAND 1 / 6 (10 MINUTES PER HOUR)				0.17	

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

05-Mar-93

DATE: BUILDING NO.:

630Z1

BLDG. TYPE:

MESS HALL (KITCHEN)

ENERGY CONSTANT CALCULATIONS

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	16500 CFM *	2074 HR/YR		TO LANGUAGE LID	
ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	16500 CFM *	6205 HR/YR		COLUMBIOS M. UD	
NSUCHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	16500 CFM *	2555 HR/YR		TO DATE OF LIP	
NSUCC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
110000	16500 CFM *	854 HR/YR			
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
DDOONG	16500 CFM *	6205 HR/YR			
DDCCC		0 kWH	=	0.00E+00 kWH/CFM-HR	
00000	16500 CFM *	2074 HR/YR	1		
NSC		1654.1 MBtu	=	8.66E+04 Btu/UA	
NSO	1480				
DSC		1548.9 MBtu	=	7.11E+04 Btu/UA	
DSC	1480		1		
OPT	(2 HR/DAY X 272 DAY		HR/YR		
OFI	(ZHNDAI XZIZ DAI	7,111,	=	250 HR/YR	
CHIMD	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
CHVVN	(U.S 13 KAA Y O'O 15 EII' Y	COL INIC X E DOG. CO	=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01		5.06 HR/YR	
UAR	300 FIRE 111	0.0.			
1					

E M C ENGII	MEEDS	INC					DATE:	02-Feb-93
PROJECT: EEAP,	THE EVE	, IIIO. Angion eeas	וודס עדו וומופ	INV		_	3Y:	BHS
CLIENT CONTRACT						-	JOB:	3204.000
			-0096			_	CHK:	
CLIENT PROJ. ENG						-	FILE:	630Z1BHL
LOCATION: FT LE	ONARD WC	OOD					ILE.	03021611
	BUILDII	NG HEATI	NG LOAD	CALCUL	ATION S	HEET		
BLDG NO:		BLDG NAME:						
BLDG NO:	000	KITCHEN ARE		ZONZ .				
FLOOR AREA: (SQ. F	·Tn	3,801					# FLOORS	1
SLAB PERIMETER: (I		159	-					
·			_					
I. AREAS: ([] FIELD	VERIFIED I	ELEVATION PL	ANS)	SOUTH	EAST	WEST	TOTAL	
		(00 ET)	· NORTH	1,530	666	666	2,862	
WALLS, GROSS		(SQ. FT) (SQ. FT)	0	1,330	35	28	190	
GLASS PERSONNEL DOOR		(SQ. FT)	0	42	21	42	105	
OVERHEAD DOOR		(SQ. FT)	0	0	0	0	0	
WALLS, NET		(SQ. FT)	0	1,361	610	596	2,567	
ROOF AREA (OR CE			NCONDITION	ED)		(SQ. FT)	3,801	
OVERHEAD DOOR		(SQ. FT)	0	PERSONNE		(SQ. FT)	105	
BASEMENT WALLS		(SQ. FT)	0	0	0	0	0	
II. CONSTRUCTION:	([] FIELD	VERIFIED WAI	LL, ROOF, WI	NDOW, DOOF	TYPES)		TO.	D \/ALLE
WALLS: (SKETCH C	ROSS SECT	TION OF WALL)			COMPONEN OUTSIDE A		R-VALUE 0.17
						4" FACE BF		0.17
						AIR SPACE		0.91
		JILLY .	4.		3. 4.			1.89
	, f		4" FACE BRI	CK	5.	O CIVIC		
	ه ه		AIR SPACE		6.			
	هـ: ا		6"CMU		7.	INSIDE AIR	FILM	0.68
		1/2/				TOTAL R-		4.08
		•					U=1/R	0.245
								- WALLE
ROOF: (SKETCH CF	ROSS SECT	ION OF ROOF)				COMPONEN		R-VALUE 0.17
						OUTSIDE A		0.17
<u> </u>			BUIL	T-UP ROOF		1.5' INSUL		4.98
	11111111	TITLE TO THE	——12"	INSULATION	N 3. A	CEILING A		1.00
		•	AIR	SPACE		3' INSULAT		11.00
7			4 -10	ATT INSULA		ACOUSTIC		1.79
100000	000000	SUUUUUU				INSIDE AIR	FILM	0.68
700000	<i>5000</i> 00	<u> </u>	ACO.	ISTIC TILE		TOTAL R	-ROOF =	19.95
1			•				U=1/R	0.050
							1 = 0, 100	4.64
GLASS TYPE:		PPG 'PENNVE	ERNON' C.L. T	WNDV, SSA,	.88 S.C.		R-GLASS	1.61 0.83
SLAB TYPE FLOOR:		CEMENT					SLF R-BASEM	
BASEMENT TYPE:	D/DE	NONE					R-ODOOF	
OVERHEAD DOOR		NONE METAL			,		R-PDOOF	
PERSONNEL DOOR	1175	MILIAL						
III. INFILTRATION:	(SO ET)			X CFM / SC	Q.FT.	0.000	=	0
TIGHT WALL H/M/L AVG. WALL H/M/L (S		M	2862			0.115		329
LEVIS VVALL M/IVI/L ()		171	2002	X CFM / S		0.000		0
	LID CINIC	LE DOOR			PENING / H	F 1.600	=	0
LEAKY WALL H/M/L	HH - SING		20		PENING / H		=	28
LEAKY WALL H/M/L DOOR OPENINGS /	HR - DOU	BLE DOORS		LEGEN WILL	LIDATION	(CEM)	=	357
LEAKY WALL H/M/L	HR - DOUE	BLE DOORS		TOTAL INF	LINATION	<u> </u>		
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS /	HR - DOUE		Δ ∩					0
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS /	HR - DOUE	ODOOR ARE			X DOOR 'U' X DOOR 'U'	0.000		
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS / UA OI UA PI	HR - DOUE DOOR = DOOR =	ODOOR ARE	A 105		X DOOR 'U' X DOOR 'U	0.000	=	41
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS / UA OI UA PI UA W	DOOR = DOOR = ALL =	ODOOR ARE, PDOOR ARE, WALL AREA	A 105 2,567		X DOOR 'U	0.000 0.391 0.245		41 629
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS / UA OI UA PI UA W UA RO	DOOR = DOOR = ALL = DOF =	ODOOR ARE, PDOOR ARE, WALL AREA ROOF AREA	A 105 2,567 3,801		X DOOR 'U' X DOOR 'U' X WALL 'U'	0.000 0.391 0.245 0.050		41 629 191 118
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS / UA OI UA PI UA W UA RG	DOOR = DOOR = ALL = DOF = LASS =	ODOOR ARE, PDOOR ARE, WALL AREA	A 105 2,567 3,801 A 190		X DOOR 'U' X DOOR 'U' X WALL 'U' X ROOF 'U' X GLASS 'L X SLF	0.000 0.391 0.245 0.050 0.621 0.830	= = = = = = = = = = = = = = = = = = = =	41 629 191 118 132
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS / UA OI UA PI UA W UA RG UA GI UA SI	DOOR = DOOR = ALL = DOF = LASS =	ODOOR ARE. PDOOR ARE. WALL AREA ROOF AREA	A 105 2,567 3,801 A 190		X DOOR 'U' X DOOR 'U' X WALL 'U' X ROOF 'U' X GLASS 'L X SLF X BASE. 'U'	0.000 0.391 0.245 0.050 0.621 0.830	= = = = = = = = = = = = = = = = = = =	41 629 191 118 132
LEAKY WALL H/M/L DOOR OPENINGS / DOOR OPENINGS / UA OI UA PI UA W UA RI UA GI UA SI UA BA	DOOR = DOOR = ALL = DOF = LASS = ASEM. =	ODOOR ARE. PDOOR ARE. WALL AREA ROOF AREA GLASS AREA	A 105 2,567 3,801 A 190		X DOOR 'U' X DOOR 'U' X WALL 'U' X ROOF 'U' X GLASS 'L X SLF	0.000 0.391 0.245 0.050 0.621 0.830	= = = = = = = = = = = = = = = = = = =	0 41 629 191 118 132 0 369

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 EMC NO.: DATE:

5-93

ZONE

TOT Sen. TOT. Let (BTU/H) (BTU/H) 5,400 4,400

4,400

5,400

03-Feb		ଝ
	(ED BY: ED BY:	

BHS	CEL.	63021	930
PREPARED BY:	CHECKED BY:	FILE:	BLDG:

Rates of Heat Gain from Occupants of Conditioned Spaces

Zone	No. of Activity	Activity		Typical	Sensible	Latent
Š	People Type	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)
-	20		5 Standing, light work, or walking stowly	Retail store, bank	270	220
TOTAL	20		T T T T T T T T T T T T T T T T T T T			TOTAL
			Peak Wattage Value for Lights			
Zone	No. of Fixture	Fixture				
No.	Fixtures	Type	Description	Watts/Fixture	Total Wattage	
-	23		8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	3,864	
	16		6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	180	1,344	
/						

5,208

TOTAL

39

TOTAL

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		Total
Š	Equipmen	Type	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
	3		Refrigerator (large), per 100 cu.ft. of space	220	40%	099	2,253
	9	66	Ren	2,101		12,606	43,024
Z.,	4	38	Fryer (deep fat), per lb. of fat capacity	372		1,488	5,079
P	2	83	Freezer (large)	1,340	40%	2,680	9,147
2.	-	115	115 Steam Kettle, per quart capacity	146	13%	146	498
	ß	88	88 Mixer (large), per quart of capacity	28	100%	140	478
	N	26	97 Oven (large convection), per cu.ft. of oven space	1,304		2,608	8,901
	-	73	Blender, per quart of capacity	454	%86	454	1,550
	2	114	<u> </u>	346	44%	692	2,362
	N	87	ĭò	2,628	100%	5,256	17,939
				TOTAL	28%	26.730	91229

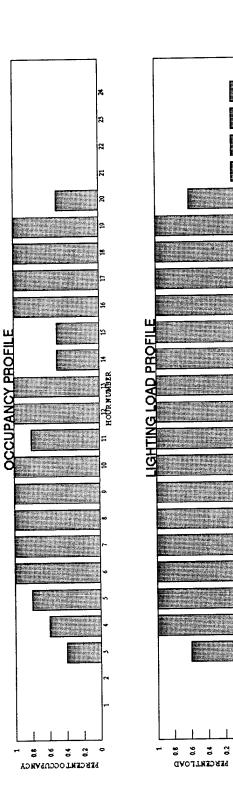
E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 – 92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

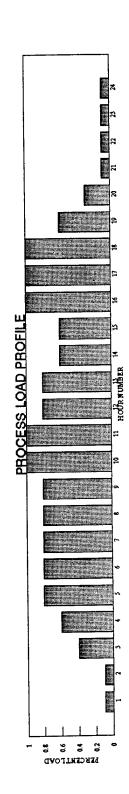
3204-000	03-Feb-93	Z Z
EMC NO:	DATE:	PREPAREN RY

BHS CEL 630Z1 PREPARED BY: CHECKED BY: FILE: BLDG: ZONE:

630

20.18	18 20 18	TYPE OF										ĭ	HOUR NUMBER	UMB	Ë										
2 2	ū	PROFILE	F	0	3	4	5	9	-	8	6	0	<u> </u>	12 13	14	15	16	11	18	19	ଷ	21	ผ	23	24
<u>-</u>								-	$\ $		$\ $		١			4	,	١			2	ŀ	-	-	Γ
9	Moce Hell	COC IPANCY			70	90	80	_	•	_	_	0		_	 ლ	<u>ر</u> د	_	_	_	-		1		1	T
J	T I I I I I I I I I I I I I I I I I I I	10000	1	1	1	1	+	1					١,				•	L	·	Ŧ	ď	ċ	-	-	-
		CNILIC	0	-	9	-	_	_	_	_	=	_	_	_	_	_	_	-	_	-	9	-	-	-	:
		000000	7	-	40	90	80	80	0.8	78 (8	-	0	8 0.8	9.0	90	-	-	-	9.0	0.3	0.1	0.1	0.1	-
		20120	2	;		2			2																1





HOUR NUMBER

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

BLDG 630 - MES	S HALL KITCH	EN AREA - ZONE	1 BASERO	(11 2201		•
COOLING ON WEE ROOF HAS VENTE WEEKEND INTERN LAST CASE FLAG SKY CLEARNESS NUMBER OF ZONE WEATHER SOURCE	EKEND (1=YES, ED ATTIC (1=Y NAL GAINS FAC G (1=YES, 0=N FACTOR (CLN) ES (NZ) E ISW=0 WEATH	ER ON TAPE6, I	1.0000 1.0000 1 01 SW=1	0 00		
	' WILD DOTTDAY	0 2				
*****REAL WE	ATHER FROM DI	SK*****				
FILE NAME MO STATION 13995	YEAR 1955	25 750000				
SILE THILIDS	E SEA LEVEL	IN FEET (ELEV)	1158.0	00000		
MEAN AMRIENT	TEMP FOR YEAR	IN FEET (ELEV) DEG F (TMAMB) WING DEG F (AM	56.0	00000		
MEAN ANDIENT OF (ROUND TEMP S	WING DEG F (AM	IGRN)	20.000000		
COLAR ARSORRT	IVITY OF WALI	S (ALPHA) 6	.800000E-01			
SOLAR ABSORBT	VITY OF ROOF	(ALFRF) 3.	500000E-01			
SOLAR REFLECT	ANCE OF GROUP	LS (ALPHA) 6 (ALFRF) 3. ND (RHOG) 2.	000000E-01			
INITIAL TEMP	OF AIR IN BU	LIDING DEG F (T	(AO) 7	0.000000		
INITIAL TEMPE	RATURE OF BU	LDING MASS (TO	70.	000000		
INSIDE SUMMER	HUMIDITY RAT	TIO LBS/LBS (HF	(S) 9.000	000E-03		
INSIDE WINTER	HUMIDITY RAT	ILDING DEG F (TILDING MASS (TO LIBS/LBS (HE	(W) 0.000	OOOE+OO		
VOTTIME OF ZON	R IN CORTO LA	PET (ACTIVE)	40515.00000			
FLOOR AREA (S	QFT) 380.	RATE BTU/HR (QF	may) 11286	50.000000		
HEATING COIL	MAX HEATING	KATE BIU/DA (QI	MAX) 0.0	00000E+00		
COOLING COIL	MAX COOPING 1	RATE BTU/HR (QC MASS BTU/HR-F	(GA) 760	20.000000		
COND BETWEEN	TTRATION RAT	E CFM (CFMI)	357.0000	00		
INFILTRATION	PROFILE	(
1.00 1.	00 1.00	1.00	1.00	1.00	1.00	1.00
		1.00				
1.00 1.	00 1.00	1.00	1.00	1.00	1.00	1.00
B FACTOR IN II C FACTOR IN I BUILDING THER BASEMENT UA F SLAB ON GRADE PARTITION UA DOOR UA BTU/H WINDOW GLASS DAY TIME WIND	NFILTRATION DESCRIPTION DE LA RESERVA	EQUATION (CINA) EQUATION (CINA) EQUATION (CINC) BTU/F (CMCP) -F (BSNF) 0.0000000 41.000000 30 SQFT-F (WNDUO) R-SQFT-F (WNDUO) D) 5.9000000	2.16300 8.33000 24800.000 .000000E+00 159.00000 E+00 6.930472	00E-03 0000		
		WALL D	ልጥል			
		WALL <i>DI</i>	2	3	4	
WALL NUMBER	(27)	.00		180.00	-90.00	
AZIMUTH ANGLE WALL AREA SQF	T (AWI.I.)	1361.0	596.0	.0	610.0	
WALL AREA SOF WINDOW AREA S	OFT (AWND)	127.0	28.0	.0	35.0	
WINDOW HEIGHT	FT (WNDH)	10.0		10.0	10.0	
WINDOW WIDTH	FT (WNDW)	12.7	2.8	.0	3.5	
WIDTH OF OVER	HANG (WOH)	.0	.0	.0	.0	
OVERHANG HGT	ABV WNDW (HOH) .0	.0	.0	.0	

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .245	120.0 .245	120.0 .245
WALL TRANSFER FUNCTIONS CN FACTORS	.01837	.01837	.01837	.01837
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00003	.00003	.00003	.00003
N=3	.01017	.01017	.01017	.00498
N=4 N=5	.00037	.00037	.00037	.00037
N=6	*****	*****	*****	********
NUMBER OF DN FACTORS (ND)	5	5	J	J
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1,00000	1.00000	1.00000	1.00000
N=1 N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	00212
N=5	.00212	******	*****	*****
N=6 ROOF AREA SQFT (AROF) 3801.	.000000			
		0000E-02		
DOOR PRINCIPLINCTIONS USED (1=Y)	ES. U=NOI	(IROUF)	1	
		13E-02		
ROOF B TRANSFER FUNCTIONS (BNR .136E-02 .140E-01 .848E-02) 380ፑ03	543.	543.	
	1			
1 00 - 600 .822E-01 ·	300E-03	999.	999.	
ervitche eile Decrees (T1LT)	0.000000	ETUU		
EVULTOUR ASTMURH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	,		
SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	00000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
SKYLIGHT GLASS NUMBER (NS)	1		_	
SKYLIGHT SHADING COEFFICIENT (SHSK) (0.00000E+U	1	1
SUMMER START MONTH AND DAY FOR S	HSK (MND.)	, NDSI)	1	1
SUMMER END MONTH AND DAT FOR S.	0.000000E+	-00		
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)	1.	292998	
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	(UN)	1.292998	\=_∩1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	ACE (FAP)	2.800000	/E-01

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

	KW -	- -	- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	5.	25544.	5400.	4400.		
HOUR	HO	OURLY FRAC!	TION OF PE			•
1	.100	.100	.000	.000	60.0	.0
2	.100	.100	.000	.000	60.0	.0
3	.600	.400	.400	.400	60.0	.0
4	1.000	.600	.600	.600	60.0	.0
5	1.000	.800	.800	.800	60.0	.0
_	1.000	.800	1.000	1.000	60.0	.0
6	1.000	.800	1.000	1.000	60.0	.0
7		.800	1.000	1.000	60.0	.0
8	1.000		1.000	1.000	60.0	.0
9	1.000	.800			60.0	.0
10	1.000	1.000	1.000	1.000		.0
11	1.000	1.000	.800	.800	60.0	_
12	1.000	.800	1.000	1.000	60.0	.0

```
.0
                                           1.000
                                                         60.0
                                 1.000
                        .800
           1.000
  13
                                                                       .0
                                 .500
                                                         60.0
                                            .500
                       .600
            1.000
  14
                                                          60.0
                                                                        .0
                                             .500
                        .600
                                  .500
            1.000
  15
                                                                        .0
                                            1.000
                                                          60.0
                                 1.000
                      1.000
            1.000
  16
                                                                        .0
                                 1.000
                                                          60.0
                                            1.000
            1.000
                      1.000
  17
                                                                        .0
                                                          60.0
                                 1.000
                                            1.000
                       1.000
            1.000
  18
                                                                        .0
                                                          60.0
                       .600
                                            1.000
                                 1.000
            1.000
  19
                                                                        .0
                                                          60.0
                                            .500
                        .300
                                  .500
            .600
  20
                                                                        .0
                                                          60.0
                                  .000
                                             .000
             .100
                        .100
                                                                        .0
  21
                                                          60.0
                                             .000
                                   .000
             .100
                        .100
  22
                                                                       .0
                                             .000
                                                          60.0
                                   .000
                        .100
  23
             .100
                                                                       .0
                                                          60.0
                                  .000
                                             .000
                        .100
              .100
  24
                                                 60.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                 100.000000
SYSTEM TYPE, (IECN)
                          16500.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 100.000000
                                        1.000000
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
                                       24.000000
                                    65.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                                   1.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
                                            1.000000
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1128650.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 1410813.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                      .369
                                                                 .400
                                                                           .451
                                           .300
                                 .286
            .191
                      .200
 .100
                                                                           .812
                                                      .718
                                                                 .800
                                 .625
                                           .700
                      .600
 .500
            .537
                                 1.00
            .906
                      1.00
 .900
CHILLER TYPE (ITYPCH)
                                  4
                                           1.000000E-10
COOLING PLANT RATED OUTPUT BTU (CFLOT)
COOLING PLANT RATED INPUT BTU (CFLIN)
                                           0.000000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                      .000
                                                                 .000
                                                                           .000
                                           .000
                                 .000
            .000
                      .000
 .000
                                                                           .000
                                                                 .000
                                            .000
                                                      .000
                                 .000
                      .000
            .000
 .000
                      .000
                                 .000
            .000
 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A.I BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH	LOAD		SOLAR THRU WINDOW	ROOF	PARTITM DOOR AND SLAB	BSMT	WALL 0.	WINDOW	VENT AND INFL O.	LATENT
JAN	0. -244.	GAIN	3.	0. -4.	0. -4.	o. o.	-8.	-2.	-262.	0.
FEB	-201.	LOSS	4.						0. -219.	
MAR	0. -177.	GAIN LOSS	4.	0. -3.	0. -3.	0. 0.	1. -5.	0. -2.	0. -202.	o. o.
APR	.00 -60.00								.88 -90.68	
	.00 -14.80	LOSS		-1.25	-1.14	.00	98	55	1.27 -51.07	.00
JUN	.00 11	GAIN LOSS	4.70	.45 -1.12	.01 -1.06	.00	3.83 85	.01 52	.99 -34.84	.00
JUL	.00 01		4.77	.50 -1.19	.01 -1.11	.00	3.86 -1.03	.01 55	1.21 -37.00	.00
	.00	LOSS		-1.13	.01 99				.97 -36.54	
	-12.52	LOSS		-1.45	-1.22	.00	-1.24	60	1.50 -45.20	.00
OCT	.00 -55.30	LOSS		-1.93	-1.54	.00	-2.22	. 75	.73 -86.00	
	0. -126.								0. -150.	0. 0.
					0. -4.					0. 0.
TOT	0. -1164.	GAIN LOSS	48.	3. -28.	0. -25.	0.	26. -41.	0. -12.	8. -1501.	0.
MAX MAX	HEATING COOLING	LOAD=	= -112 =	8650.	BTUH ON BTUH ON	DEC 18 DEC 31	HOUR 24	AME	BIENT TEN BIENT TEN	ip 3. ip 42.

ZONE UA BTU/HR-F 977.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A.I

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA			773 CE		_	OIN-	LIGHTING	PROCESS	HEAT	HEAT GAIN
	INTE	RNAL S	JRE F			CIDENT	THOUSAND	MILLION	MILLION	MILLION BTU
MONTH			MIN	DAY	HR .	AMBT.	KWH	BTU	BTU	
JAN	60.	68.	59.	4 29	13 2		2.87	40.44	8.39	32.05
FEB	61.	75.	59.	17 2	18 2		2.60	36.53	6.98	28.35
MAR	63.	85.	59.	11 14	18 2		2.87	40.44	7.14	30.80
APR	68.	93.	60.	7 9	19 2		2.78	39.14	6.38	29.28
MAY	73.	102.	60.	27 11	19 2		2.87	40.44	6.67	30.33
JUN	80.	104.	60.	30 19	19 2	82.	2.78	39.14	6.06	28.95
JUL	85.	114.	60.	15 10		87.	2.87	40.44	6.35	30.01
AUG	83.	109.		12 24			2.87	40.44	6.63	30.29
SEP	77.	110.	60.	2 26	19		2.78	39.14	5.83	28.73
OCT	67.	92.	60.	14 11	19	71.	2.87	40.44	6.81	30.47
NOV	64.	83.	59.	17	19	59.	2.78	39.14	6.90	29.80
DEC	61.	78.		23 18	19	-	2.87	40.44	6.90	30.56
YEAR			33.	10	•	•	33.84	476.17	81.04	359.62

630A.I

BEACON Energy Analysis By Energy Systems Engineers, Inc. BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	*10*****	URS WHEN	MUMIKAM P Fra	
MONTH	HEATING	ECONOMIZER	HEATING COC		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	659 549 533 276 119 6 1 0 110 323 425 570	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1077E+07 9416E+06 8468E+06 5748E+06 4008E+06 4727E+05 -9145. .0000 2719E+06 4969E+06 8096E+06 1129E+07	.0000
YEAR	3571	0	12	0	1123E107	

SYSTEM TOTALS

монтн	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	376.26	.00	2.87	40.44	2.46	32.05	8.7
FEB	307.47	.00	2.60	36.53	2.05	28.35	8.7
MAR	278.64	.00	2.87	40.44	2.09	30.80	8.7
APR	110.41	.00	2.78	39.14	1.87	29.28	8.7
MAY	38.36	.00	2.87	40.44	1.95	30.33	8.7
JUN	1.61	.00	2.78	39.14	1.77	28.95	8.7
JUL	.27	.00	2.87	40.44	1.86	30.01	8.7
AUG	.00	.00	2.87	40.44	1.94	30.29	8.7
SEP	32.80	.00	2.78	39.14	1.71	28.73	8.7
OCT	116.05	.00	2.87	40.44	2.00	30.47	8.7
NOV	207.40	.00	2.78	39.14	2.02	29.80	8.7
DEC	386.02	.00	2.87	40.44	2.02	30.56	8.7
YEAR	1855.29	.00	33.84	476.17	23.75	359.62	8.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 665084. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A.I

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1077E+07
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	9416E+06
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.0000	8468E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	5748E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	4008E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.0000	4727E+05
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.0000	-9145.
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	.0000
SEP	1800.	1330.	1.000	68.	0.	٥.	0	0	.0000	2719E+06
OCT	1394.	924.	1.000	57.	ο.	0.	0	0	.0000	4969E+06
NOV	1008.	710.	1.000	47.	ο.	0.	0	0	.0000	8096E+06
DEC	856.	586.	1.000	35.	0.	0.	0	12	.0000	1129E+07

BLDG 630 - MESS HALL KITCHEN ZONE 1 NIGHT SETBACK (FT LEONARD WOOD)

BTDG 630 -	WESS DALL	KIICHEN 2	OND I HE		,		
COOLING ON ROOF HAS V WEEKEND IN LAST CASE SKY CLEARN NUMBER OF	PROGRAM (CONTROL OF 1=YES, 0=N	TIONS		2		
ROOF HAS V	ENTED ATTIC	C (1=YES,	O=NO) (IAT	IC)	0		
WEEKEND IN	TERNAL GAIL	NS FACTOR	(WKEND)	1.0000	,00		
LAST CASE	FLAG (1=YE	s, 0=NO)	(LSTCS)	.O1			
SKY CLEARN	ESS FACTOR	(CLN)	1	01			
NUMBER OF	ZONES (NZ) OURCE ISW=0	WEATHER (ON TAPES. I	sw=1			
WEATHER SO	SPECIFIED	IN TAVE,	ECT. (ISW)		0		
WENTHER AD	CITE AND R	UILDING DA	ATA				
*****REAL	WEATHER F	ROM DISK*	****				
FILE NAME	MO						
GENERAL 12	OOE VEAR	1955					
SITE LATIT	UDE DEG (A	L1)	37.750000	1150	00000		
ELEVATION	ABOVE SEA	LEVEL IN	EEEL (EPEA)	56.	000000		
MEAN AMBIE	NT TEMP FO	R YEAR DE	G F (IMAMB)	1158. 56. (GRN)	20.000000		
AMPLITUDE	OF GROOMS	TEMP SWIN	AT.PHA\ 6	800000E-0	1		
SOLAR ABSO)KRIIVIII O	F ROOF (A	T.FRF) 3.	5.800000E-0 .500000E-01 .000000E-01			
SOLAR ADSC	RECTANCE OF	GROUND	RHOG) 2	.00000E-01			
TNITTAL TE	MP OF AIR	IN BUILDI	NG DEG F ((AO) (AS) 70 (AS) 9.00	70.000000		
INITIAL TE	EMPERATURE	OF BUILDI	NG MASS (TO	70	.000000		
INSIDE SUN	MER HUMIDI	TY RATIO	LBS/LBS (HI	RS) 9.00	0000E-03		
VOLUME OF	ZONE IN CU	DRIC PEFI	(AOPUS)	40515.0000	00		
FLOOR AREA	A (SQFT)	TTAR DATE	BTU/HR (O	HMAX) 1128	650.000000		
COOLING CO	OIL MAX COC	LING RATE	BTU/HR (Q	HMAX) 1128 CMAX) 0.	000000E+00		
COND BETWIN	EEN BLDG AI	TR AND MAS	S BIU/DK-r	(GA) /C	020.00000		
CONSTANT .	INFILTRATIC	JN RATE CF	M (CFMI)	357.000	000		
INFILTRAT	ION PROFILE	<u>C</u>		1 00	1 00	1 00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
				1.00			
A FACTOR	IN INFILTRA	ALTON EOUR	TION (CINE) 5.2900) 2.1650) 8.3300 24800.00	00E-02		
B FACTOR	IN INCIDIRA	ATION EQUA	TION (CINC	8.3300	00E-03		
C FACTOR	THERMAL MAS	SS MCP BTU	/F (CMCP)	24800.00	0000		
HAS BUILDING	IIM PACION I	D T O / 1111	DD::- /				
CT ND ON C	וחדים בה שתבס	R BTU/HR-F	(SLBF)	1039.000	000		
PARTITION	UA BTU/HR- TU/HR-F (DI	-F (GUA)	0.000000	E+00			
DOOR UA B	TU/HR-F (DU	JA)	30				
WINDOW OIL	ACC NUMBER	(N(÷)	30	6.93047	72E-01		
DAY TIME	MINDOM O B.	10/ nk-5Qr 1	YOUWN T-TO	N) 6.930	0472E-01		
NIGHT IIM	ADING FACTO	OR (SHD)	5.900000	E-01			
WINDON DI	110 110 1	,					
			MATT D	እ ጥ እ			
	nn.		WALL D	2	3	4	
WALL NUMB	EK Note /271		.00	90.00	180.00	-90.00	
AZIMUTH A	NGLE (AZ) SQFT (AWL)	Ι.)	1361.0	596.0	.0	610.0	
AVTU WUTA	EA SQFT (A	WND)	127.0	28.0	.0	35.0	
WINDOW HE	IGHT FT (W	NDH)	10.0	10.0	10.0	10.0	
WINDOW WI	DTH FT (WN)	DW)	12.7	2.0		_	
WIDTH OF	OVERHANG (WOH)	.0	.0	.0	.0	
OVERHANG	HGT ABV WN	DW(HOH)	.0	.0	.0	.0	

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .245	120.0 .245	120.0 .245	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	.01837 5	.01837 5	.01837 5	.01837 5	
WALUE BTU/(HR-SQF1-F) (OW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.00003	.00003	.00003	.00003	
N=3 N=4	.01017	.01017	.01017	.00498	
N=5 N=6	*****	*****	*****	*****	
NUMBER OF DN FACTORS (ND) DN FACTORS	5	1 00000	1 00000	1.00000	
N=1 N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3 N=4	.65654 07415	07415	07415	07415	
NUMBER OF DN FACTORS (ND) DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6 ROOF AREA SQFT (AROF) 3801	.00212	.00212 *****	.00212	*****	
ROOF AREA SQFT (AROF) 3801 ROOF U VALUE BTU/HR-SQFT-F (UF	L.000000 RF) 5.00	0000E-02	1		
ROOF AREA SQFT (AROF) ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS (SED (1=Y ROOF C TRANSFER FUNCTION (CNR)	(ES, U=NO) 2.4239	(1ROOF) 013E-02	1		
136E-02 .140E-01 .848E-02	.380E-03	543.	543.		
ROOF D TRANSFER FUNCTIONS (DNF 1.00600 .822E-01 SKYLIGHT TILT DEGREES (TILT)	300E-03	999. E+00	999.		
SKYLIGHT AZIMUTH ANGLE DEGREES	S (AZSK)	9999.000	0000		
SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00 0.0	00000E+00			
OVERHANG HEIGHT ABOVE SKYLIGHT	r fr (SKOH)	0.0000			
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR	(SHSK) (R SHSK (MS	0.00000E+0	1	1	
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY)	SHSK (MND,1	NDND) +00	T	1	
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-1 NIGHT TIME SKYLIGHT U BTU/SQF	HR-F (SKYU T-HR-F (SK	YUN)	1.292998	· つを_01	
FRACTION OF PROCESS HEAT TO 1	NTERNAL SPA	ACE (FAP)	2.80000	JE 01	
55.0 55.0 55.0	60.0				
60.0 60.0 60.0					
60.0 60.0 60.0	60.0	55.0	55.0	55.0	55.0

		intern	AL GAINS	AND PROFILES	THERMOS	
PEAK VAL	KW - LIGHTS 5.	25544.	BTU/HR - PEOPLE ENSIBLE 5400.	PEOPLE LATENT 4400.	HEATING	COOLING
HOUR	HO	OURLY FRACT			0	•
1	.100	.100	.000	.000	55.0	.0
2	.100	.100	.000	.000	55.0	.0
3	.600	.400	.400	.400	55.0	.0
-		.600	.600	.600	60.0	.0
4	1.000				60.0	.0
5	1.000	.800	.800	.800	60.0	• •

```
.0
                                                       60.0
                                          1.000
                       .800
                                1.000
  6
           1.000
                                                                     .0
                                                       60.0
                                          1.000
                       .800
                                1.000
           1.000
  7
                                                       60.0
                                                                     .0
                                1.000
                                          1.000
           1.000
                       .800
  8
                                                                     .0
                                                       60.0
                                          1.000
                                1.000
                       .800
  9
            1.000
                                                                     .0
                                                       60.0
                                          1.000
                      1.000
                                1.000
            1.000
  10
                                                                     .0
                                .800
                                           .800
                                                       60.0
            1.000
                      1.000
  11
                                                                     .0
                                                       60.0
                                1.000
                                          1.000
                      .800
            1.000
  12
                                                       60.0
                                                                     .0
                       .800
                                          1.000
                                1.000
            1.000
  13
                                                                     .0
                                          .500
                                                       60.0
                      .600
                                .500
            1.000
  14
                                                                     .0
                                                       60.0
                                           .500
                       .600
                                 .500
            1.000
  15
                                                                     .0
                                                       60.0
                                          1.000
                                1.000
                      1.000
            1.000
  16
                                                       60.0
                                                                     .0
                                1.000
                                          1.000
                      1.000
  17
            1.000
                                                                     .0
                                                       60.0
                                          1.000
                                1.000
                      1.000
            1.000
  18
                                                                     .0
                                                       60.0
                                1.000
                                          1.000
            1.000
                      .600
  19
                                           .500
                                .500
                                                       60.0
            .600
                       .300
  20
                                                                     .0
                                                       55.0
                       .100
                                 .000
                                            .000
             .100
  21
                                                                     .0
                                            .000
                                                        55.0
                       .100
             .100
                                 .000
  22
                                                                     .0
                                            .000
                                                        55.0
                       .100
                                 .000
             .100
  23
                                                                     .0
                                                        55.0
                                 .000
                                            .000
             .100
                       .100
  24
                                             60.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
                                              100.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                            2
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM)
                        16500.000000
ECONOMIZER HIGH TEMP LIMIT F 100.000000
SYSTEM SUPPLY AIR START TIME HR
                                       1.000000
SYSTEM SUPPLY AIR STOP TIME HR
                                     24.000000
                                   65.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                                 1.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                       5.500000E-01
FAN EFFICIENCY (EFAN)
                                           1.000000
FAN TOTAL PRESSURE IN. WATER (DP)
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1128650.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 1410813.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                              .400
                                                    .369
                                                                         .451
                                         .300
                               .286
                      .200
           .191
 .100
                                                                         .812
                                                              .800
                                          .700
                                                    .718
           .537
                      .600
                                .625
 .500
                                1.00
 .900
           .906
                     1.00
                                 4
CHILLER TYPE (ITYPCH)
                                          1.000000E-10
COOLING PLANT RATED OUTPUT BTU (CFLOT)
COOLING PLANT RATED INPUT BTU (CFLIN)
                                          0.000000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                               .000
                                                                         .000
                                                    .000
                                          .000
                                .000
           .000
                      .000
 .000
                                                                         .000
                                          .000
                                                    .000
                                                              .000
           .000
                      .000
                                .000
 .000
                      .000
                                .000
 .000
           .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-2.I BLDG 630 - MESS HALL KITCHEN ZONE 1 NIGHT SETBACK (FT LEONARD WOOD)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

				SOLAR THRU		PARTITN DOOR AND				VENT AND	
1	нтим	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	MINDOM	INFL	LATENT O.
	JAN	0.	GAIN	3.	0.	0. -4.	0.	0. -8.	υ.	0. -247.	U .
		-228.	LOSS		-4.	-4.	υ.	-0.	-2.	271.	٠.
		0.	GAIN	А	0.	0. -3.	٥.	1.	0.	0.	0.
	FEB	-187.	LOSS	*•	-3.	-3.	0.	-6.	-2.	-206.	0.
						0.					
				4.	0.	-3.	0.	-4.	-1.	-188.	o.
		-162.									
	A D D	- 00	GAIN	4.34	.27	.01	.00	2.74	.01	.91	.00
	ALIX .	-52 .7 7	LOSS		-1.76	-1.64	.00	-1.99	82	-83.87	.00
							00	2 74	01	1.27	.00
	MAY	.00	GAIN	4.70	.40	.02 -1.10	.00	90	53	-47.31	.00
		-10.79	LOSS		-1.20	-1.10					
	TIIN	00	CAIN	4.70	. 45	.01	.00	3.83 85	.01	.99	.00
	DOM	.00	LOSS	4.70	-1.12	-1.06	.00	85	51	-34.74	.00
										1 01	.00
	JUL	.00	GAIN	4.77	.50	.01	.00	3.86	.01	7.21	.00
		01	LOSS		-1.19	-1.11	.00	-1.03	55	-37.00	.00
		00	CATN	4 24	13	.01	.00	3.66	.01	.97	.00
	AUG	.00		4.34	-1.13	99		79	48	-36.54	.00
	SEP	.00	GAIN	3.90	.24	.02	.00	2.95	.01	1.49	.00
		-7.95	LOSS		-1.40	-1.16	.00	-1.14	58	-40.94	.00
						0.1	00	2 01	00	77	.00
	OCT	.00	GAIN	3.60	-1 02	.01 -1.43	.00	-1.96	69	-76.83	.00
		-45.36	LOSS								
	NOV	0.	GAIN	3.	0.	0.	0.	1.	0.	0.	o.
	1.0.	-114.	LOSS		-3.	-2.	0.	-4.	-1.	-139.	0.
							•	^	0	0	0.
	DEC	0.	GAIN	3.	0.	0. -4.	0.	-8.	-2	-273.	0.
		-258.			-4.						
	mΩm	^	CATN	48.	3.	0. -24.	0.	26.	0.	8.	0.
	101	-1066-	LOSS	70.	-27.	-24.	0.	-38.	-12.	-1409.	0.
		1000.									
							DDG 10	110115 1) 75.5°	ייינות מדכו	ЕМР 3.
	MAX	HEATING	LOAD	= -112	8650.	BTUH ON BTUH ON	DEC 31	HOUR S	7 AMI 1 AMI	BIENT T	EMP 42.
	MAX	COOLING	LOAD	=	0.	BIOH ON	בי סשת	HOUR 2	z Firi		

ZONE UA BTU/HR-F 977.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-2.I

BLDG 630 - MESS HALL KITCHEN ZONE 1 NIGHT SETBACK (FT LEONARD WOOD)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI MAX	SPACE URE F MIN	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	59.	68.	54.	4 29	13 2		2.87	40.44	8.21	31.87
FEB	60.	75.	54.	17 2	18 2		2.60	36.53	6.86	28.23
MAR	62.	85.	54.	11 14	18 2		2.87	40.44	7.13	30.79
APR	67.	93.	55.	7 11	19 2		2.78	39.14	6.33	29.23
MAY	73.	102.	55.	27 11	19 2		2.87	40.44	6.68	30.34
JUN	80.	104.	59.	30 19			2.78	39.14	6.06	28.95
JUL	85.	114.	60.	15 10			2.87	40.44	6.35	30.01
AUG	83.	109.	62.	12 24			2.87	40.44	6.63	30.29
SEP	76.	110.	55.	2 26			2.78	39.14	5.83	28.73
OCT	67.	92.	55.	14 11			2.87	40.44	6.81	30.47
NOV	63.	83.	55.	17 2			2.78	39.14	6.77	29.66
DEC	60.	78.	53.	23 18			2.87	40.44	6.79	30.45
YEAR							33.84	476.17	80.45	359.03

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-2.I BLDG 630 - MESS HALL KITCHEN ZONE 1 NIGHT SETBACK (FT LEONARD WOOD)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	.,0	URS WHEN NOT MET LING	MAXIMUM BTU HEATING	
JAN	631	0	0	0	1002E+07	.0000
	535	ñ	0	0	9449E+06	.0000
FEB	523	ñ	Ö	0	8501E+06	.0000
MAR		0	Ö	Ō	5946E+06	.0000
APR	244	0	0	Ö	3835E+06	.0000
MAY	98	Ü	-	Ö	-120.6	.0000
JUN	1	0	0	-		.0000
JUL	1	0	0	0	-9145.	
AUG	0	0	0	0	.0000	.0000
SEP	91	0	0	0	2810E+06	.0000
OCT	296	0	0	0	4872E+06	.0000
NOV	388	. 0	0	0	7357E+06	.0000
DEC	560	Ô	6	0	1129E+07	.0000
YEAR	3368	Õ	6	0	1129E+07	.0000
IDUK	3300	Ŭ	_			

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-2.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	351.68	.00	2.87	40.44	2.41	31.87	8.7
FEB	289.80	.00	2.60	36.53	2.01	28.23	8.7
MAR	259.78	.00	2.87	40.44	2.09	30.79	8.7
APR	97.68	.00	2.78	39.14	1.86	29.23	8.7
MAY	29.71	.00	2.87	40.44	1.96	30.34	8.7
JUN	.27	.00	2.78	39.14	1.77	28.95	8.7
JUL	.27	.00	2.87	40.44	1.86	30.01	8.7
AUG	.00	.00	2.87	40.44	1.94	30.29	8.7
SEP	26.35	.00	2.78	39.14	1.71	28.73	8.7
OCT	100.74	.00	2.87	40.44	2.00	30.47	8.7
NOV	187.14	.00	2.78	39.14	1.98	29.66	8.7
DEC	367.33	.00	2.87	40.44	1.99	30.45	8.7
YEAR	1710.74	.00	33.84	476.17	23.57	359.03	8.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 626901. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-2.I BLDG 630 - MESS HALL KITCHEN ZONE 1 NIGHT SETBACK (FT LEONARD WOOD)

OTHER MONTHLY STATISTICS

ГИОМ	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT-	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1002E+07
FEE	1421.	901.	1.000	37.	0.	0.	0	0	.0000	9449E+06
MAF	1864.	1216.	1.000	43.	0.	Ο.	0	0	.0000	8501E+06
API	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	5946E+06
MA	2489.	1771.	1.000	65.	0.	ο.	0	0	.0000	3835E+06
JUI	N 2567.	1933.	1.000	72.	0.	0.	0	0	.0000	-120.6
JUI	2470.	1954.	1.000	77.	0.	٥.	0	0	.0000	-9145.
AUG	3 2211.	1784.	1.000	76.	0.	٥.	0	0	.0000	.0000
SE	P 1800.	1330.	1.000	68.	0.	٥.	0	0	.0000	2810E+06
OC'	r 1394.	924.	1.000	57.	0.	0.	0	0	.0000	4872E+06
МО			1.000	47.	0.	ο.	0	0	.0000	7357E+06
DE		586.	1.000	35.	0.	ο.	0	6	.0000	1129E+07

BLDG 630 - MESS HALL KITCHEN ZONE 1 DDC (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 2
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ)
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                           YEAR 1955
 STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

MEAN AMBIENT TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
AMPLITUDE OF GROUND TEMP SWING DEG F (AFIGRA),
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMP OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 40515.000000
 FLOOR AREA (SQFT) 3801.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1128650.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 76020.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 357.000000
 INFILTRATION PROFILE
                                                                                                            1.00
                                                                                          1.00
                                                                                                                               1.00
                                    1.00
                                                      1.00 1.00
                  1.00
  1.00
                                                                                          1.00
  1.00 1.00 1.00 1.00
                                                                      1.00
                                                                                                             1.00
                                                                                                                               1.00
                                                                                          1.00
                                                                                                           1.00
                                                                                                                               1.00
                                                                         1.00
                                                      1.00
                                     1.00
                  1.00
   1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 5.290000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 24800.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 159.00000
                                                                        159.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
 DOOR UA BTU/HR-F (DUA) 41.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
 WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1361.0 596.0 .0 610.0
WINDOW AREA SQFT (AWND) 127.0 28.0 .0 35.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 12.7 2.8 .0 3.5
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0 .245	120.0 .245	120.0 .245	
WALL TRANSFER FUNCTIONS					
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.01837	.01837	.01837	.01837	
NUMBER OF BM FACTORS (NR	5	5	5	5	
NUMBER OF BU (BN)	-				
BN FACTORS BN (BN)	.00003	.00003	.00003	.00003	
N=7	.00283	.00283	.00283	.00283	
N=2	.01017	.01017	.01017	.01017	
N=3	.00498	.00498	.00498	.00498	
N=4	.00037	.00037	.00037	.00037	
N=5	*****	*****	*****	*****	
N=6	5	5	5	5	
NUMBER OF DN FACTORS (ND)	3	•			
	1 00000	1.00000	1.00000	1.00000	
N=1	_1 50000	-1.50943	-1.50943	-1.50943	
N=2	-1.50543	65654	.65654	.65654	
N=3	- 07/15	- 07415	07415	07415	
N=4	07413	00212	.00212	.00212	
N=5	.00212	*****	*****	*****	
N=6 ROOF AREA SQFT (AROF) 380	1 000000				
ROOF U VALUE BTU/HR-SQFT-F (U ROOF TRANS FUNCTIONS USED (1=	KE) 5.00	/TBOOF\	1		
ROOF TRANS FUNCTIONS USED (1=	1ES, U-NO)	(IROOF)	-		
ROOF C TRANSPER FUNCTION (CITY	, 2.3200	7136-02			
POOR R PRANSMER WINCHIUMS IDM	K i		5/13		
.136E-02 .140E-01 .848E-02	.3805-03	545.	242.		
ROOF D TRANSFER FUNCTIONS (DN	K)	000	000		
1.00600 .822E-01	300E-03	333.	333.		
SKYLIGHT TILT DEGREES (TILT)	0.000000)E+00	000		
SKYLIGHT AZIMUTH ANGLE DEGREE	S (AZSK)	9999.000	,000		
SKYLIGHT HEIGHT FT (SKH)	.000000E+00	,			
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.	000000E+00	00000m.00			
EVVITCUM OVERHANG WIDTH FT (S	KOW) U.U	プロロロロロ語でして	000#±00		
OVERHANG HEIGHT ABOVE SKYLIGH	T FT (SKOH)) 0.0000	JUUE+UU		
SKYLIGHT GLASS NUMBER (NS)	1		20		
SKYLIGHT SHADING COEFFICIENT	(SHSK)).000000E+0	1	1	
SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FO SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	R SHSK (MS	r, NDST)	, <u> </u>	1	
SUMMER END MONTH AND DAY FOR	SHSK (MND,	NDND)	T	T	
SKY LIGHT AREA SQFT (ASKY)	0.000000E	+00			
DAYTIME SKY LIGHT U BTU/SQFT-	HR-F (SKYU)) . 1.	.292998		
NIGHT TIME SKYLIGHT U BTU/SQF	T-HR-F (SK)	YUN)	1.292998	0= 01	
FRACTION OF PROCESS HEAT TO I	NTERNAL SPA	ACE (FAP)	2.80000	DE-OI	
WEEKEND HEATING THERMOSTAT PR	ROFILE		F0 0	58.0	E0 0
55.0 55.0 55.0	58.0	58.0	58.0	56.0	30.0
					58 N
58.0 58.0 58.0	58.0	58.0	58.0	30.0	55.0
58.0 58.0 58.0	58.0	55.0	55.0	33.0	23.0

		INTERN	AL GAINS	AND PROFILES	THERMOS	
PEAK VAL	KW - LIGHTS 5.	25544.	BTU/HR - PEOPLE ENSIBLE 5400.	PEOPLE LATENT 4400.	HEATING	COOLING
HOUR	HO	OURLY FRACT				_
1	.100	.100	.000	.000	55.0	.0
2	.100	.100	.000	.000	55.0	.0
_	.600	.400	.400	.400	55.0	.0
3				.600	58.0	.0
4	1.000	.600	.600			
E	1 000	. 800	.800	.800	58.0	.0

```
.0
                                                      58.0
                                         1.000
                      .800
                               1.000
           1.000
  6
                                                                    .0
                                                      58.0
                                         1.000
                      .800
                               1.000
           1.000
  7
                                                                    .0
                                                      58.0
                                         1.000
                               1.000
                      .800
           1.000
  8
                                                      58.0
                      .800
                               1.000
                                         1.000
           1.000
  9
                                                                    .0
                                         1.000
                                                      58.0
                     1.000
                               1.000
           1.000
 10
                                                                    .0
                                          .800
                                                      58.0
                                .800
           1.000
                     1.000
 11
                                                      58.0
                                                                    .0
                               1.000
                                         1.000
                      .800
           1.000
 12
                                                      58.0
                                                                    .0
                      .800
                                         1.000
                               1.000
           1.000
 13
                                                                    .0
                                         .500
                                                      58.0
           1.000
                      .600
                                .500
  14
                                                                    .0
                                .500
                                          .500
                                                      58.0
                      .600
           1.000
  15
                                                                    .0
                                                      58.0
                                1.000
                                          1.000
                     1.000
           1.000
 16
                                                                    .0
                                                      58.0
                                          1.000
                     1.000
                                1.000
           1.000
 17
                                                                    .0
                                                      58.0
                                         1.000
           1.000
                                1.000
                     1.000
  18
                                                      58.0
                                                                    .0
                                1.000
                                         1.000
                      .600
  19
           1.000
                                                                    .0
                                .500
                                          .500
                                                      58.0
                       .300
            .600
  20
                                           .000
                                                                    .0
                                                      55.0
                       .100
                                .000
             .100
  21
                                                                    .0
                                           .000
                                                      55.0
                                .000
                       .100
            .100
  22
                                                      55.0
                                                                    .0
                                .000
                                           .000
             .100
                       .100
  23
                                                                    .0
                                .000
                                           .000
                                                       55.0
                       .100
             .100
  24
                                           60.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
SYSTEM TYPE, (IECN) 2
                       16500.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 100.000000
                                      1.000000
SYSTEM SUPPLY AIR START TIME HR
                                     24.000000
SYSTEM SUPPLY AIR STOP TIME HR
SYSTEM MIXED AIR TEMP(TMXAIR)
                                  65.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                                1.000000
FAN EFFICIENCY (EFAN)
                        5.500000E-01
                                          1.000000
FAN TOTAL PRESSURE IN. WATER (DP)
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1128650.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 1410813.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                   .369
                                                                        .451
                                                             .400
                                         .300
                               .286
                     .200
 .100
           .191
                                                                       .812
                                         .700
                                                   .718
                                                             .800
                               .625
                     .600
           .537
 .500
                     1.00
                               1.00
           .906
CHILLER TYPE (ITYPCH)
                                          1.00000E-10
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                         0.00000E+00
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                        .000
                                                   .000
                                                              .000
                                         .000
                               .000
                     .000
 .000
           .000
                                                                        .000
                                                              .000
                                         .000
                                                   .000
                               .000
 .000
           .000
                     .000
                     .000
                               .000
           .000
 .000
```

BLDG 630 - MESS HALL KITCHEN ZONE 1 DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD 0. -213.	GAIN	SOLAR THRU WINDOW 3.	^	PARTITN DOOR AND SLAB 03.	BSMT O	0.	0.	0.	LATENT 0. 0.
FEB	0.		4.		0. -3.					o. o.
	0. -149.				0. -3.					
	.00 -46.38		4.34	.28 -1.69	.01 -1.56	.00	2.86 -1.85	.01 78	1.02 -77.97	.00
	.00 -8.57		4.70	.40 -1.18	.02 -1.07	.00	3.80 87	.01 52	1.39 -45.36	.00
JUN	.00	GAIN LOSS	4.70	.45 -1.12	.01 -1.06	.00	3.83 85	.01 51	.99 -34.74	.00
JUL	.00	GAIN LOSS	4.77	.50 -1.19	.01 -1.11	.00	3.86 -1.03	.01 55	1.21 -36.99	.00 .00
AUG		GAIN LOSS	4.34	.43 -1.13	.01 99	.00	3.66 79	.01 48	.97 -36.54	.00
SEP	.00 -6.00	GAIN LOSS	3.90	.25 -1.38	.02 -1.14	.00	2.99 -1.10	.01 57	1.69 -39.33	.00
OCT	.00 -38.31	GAIN LOSS	3.60	.12 -1.75	.01 -1.35	.00	2.11 -1.80	.00 65	.84 -70.28	.00
NOV	0. -104.		3.	0. -2.	0. -2.	0. 0.	1. -4.	0. -1.	0. -129.	o. o.
DEC	0. -243.		3.	0. -4.	0. -4.	0.	0. -8.	0. -2.	0. -260.	o. o.
TOT	0. -983.	GAIN LOSS	48.	3. -26.	0. -23.	0. 0.	27. -36.	0. -11.	9. -1332.	o. o.
MAX MAX	HEATING COOLING	LOAD=	= -112 =	8650.	BTUH ON BTUH ON	DEC 18 DEC 31	HOUR S	9 AMI 4 AMI	BIENT TE BIENT TE	MP 3. MP 42.

ZONE UA BTU/HR-F 977.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-1.I BLDG 630 - MESS HALL KITCHEN ZONE 1 DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	PERAT	SPACE URE F MIN	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	58.	68.	54.	4 29	13 2		2.87	40.44	8.20	31.86
FEB	59.	75.	54.	17 2	18 2		2.60	36.53	6.69	28.06
MAR	61.	85.	54.	11 14	18 2		2.87	40.44	7.06	30.72
APR	66.	93.	55.	7 11	19 2		2.78	39.14	6.31	29.21
MAY	73.	102.	55.	27 11	19 2		2.87	40.44	6.67	30.33
JUN	80.	104.	59.	30 19	19 2		2.78	39.14	6.06	28.95
JUL	85.	114.	60.	15 10	19 4		2.87	40.44	6.35	30.01
AUG	83.	109.	62.	12 24			2.87	40.44	6.63	30.29
SEP	76.	110.	55.	2 26			2.78	39.14	5.83	28.73
OCT	66.	92.	55.	14 11			2.87	40.44	6.78	30.44
NOV	62.	83.	55.	17 2			2.78	39.14	6.77	29.66
DEC	59.	78.	53.	23 18			2.87	40.44	6.73	30.39
YEAR							33.84	476.17	80.07	358.65

BLDG 630 - MESS HALL KITCHEN ZONE 1 DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	MOTIDATION OF THE	OURS WHEN NOT MET OLING	MAXIMUM BTU HEATING	
MONIN	1111111111					
JAN	620	0	0	0	9680E+06	.0000
	513	Õ	0	0	8981E+06	.0000
FEB		Ô	ñ	0	8060E+06	.0000
MAR	507	0	ñ	0	5452E+06	.0000
APR	228	0	0	Ö	3448E+06	.0000
MAY	81	0	0	ŏ	.0000	.0000
JUN	0	0	0	Ö	.0000	.0000
JUL	0	0	Ü	_		.0000
AUG	0	0	0	0	.0000	.0000
SEP	81	0	0	Ō	2332E+06	
OCT	256	0	0	0	4464E+06	.0000
NOV	377	0	0	0	7044E+06	.0000
DEC	554	0	6	0	1129E+07	.0000
YEAR	3217	Ö	6	0	1129E+07	.0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	333.82	.00	2.87	40.44	2.40	31.86	8.7
FEB	273.32	.00	2.60	36.53	1.96	28.06	8.7
MAR	243.31	.00	2.87	40.44	2.07	30.72	8.7
APR	87.63	.00	2.78	39.14	1.85	29.21	8.7
MAY	24.57	.00	2.87	40.44	1.95	30.33	8.7
JUN	.00	.00	2.78	39.14	1.77	28.95	8.7
JUL	.00	.00	2.87	40.44	1.86	30.01	8.7
AUG	.00	.00	2.87	40.44	1.94	30.29	8.7
SEP	22.14	.00	2.78	39.14	1.71	28.73	8.7
OCT	85.31	.00	2.87	40.44	1.99	30.44	8.7
NOV	174.27	.00	2.78	39.14	1.98	29.66	8.7
DEC	351.27	.00	2.87	40.44	1.97	30.39	8.7
YEAR	1595.64	.00	33.84	476.17	23.46	358.65	8.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 596518. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-1.I

BLDG 630 - MESS HALL KITCHEN ZONE 1 DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYS TEMP. DEG +		HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	9680E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	8981E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.0000	8060E+06
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.0000	5452E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	3448E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.0000	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.0000	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	.0000
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.0000	2332E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	4464E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	7044E+06
DEC	856.	586.	1.000	35.	0.	0.	0	6	.0000	1129E+07

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD ----- PROGRAM CONTROL OPTIONS -----COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC) WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000 LAST CASE FLAG (1=YES, 0=NO) (LSTCS) SKY CLEARNESS FACTOR (CLN) 9.700000E-01 NUMBER OF ZONES (NZ) 1 NUMBER OF ZONES (NZ) WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW) ----- SITE AND BUILDING DATA -----*****REAL WEATHER FROM DISK****** FILE NAME MO YEAR 1955 STATION 13995 SITE LATITUDE DEG (AL1) 37.750000 ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000 SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01 SOLAR REFLECTANCE OF GROUND (MASS)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

70.000000

70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 40515.000000 FLOOR AREA (SQFT) 3801.000000 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1128650.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 76020.000000 357.000000 CONSTANT INFILTRATION RATE CFM (CFMI) INFILTRATION PROFILE .000 .000 .000 .000 1.00 .000 .000 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 .000 .000 .000 .000 .000 .000 .000 A FACTOR IN INFILTRATION EQUATION (CINA) 5.290000E-01 A FACTOR IN INFILTRATION EQUATION (CINE)

B FACTOR IN INFILTRATION EQUATION (CINE)

2.165000E-02

8.330000E-03 C FACTOR IN INFILTRATION EQUATION (CINC) BUILDING THERMAL MASS MCP BTU/F (CMCP) 24800.000000 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 159.000000 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 41.000000
WINDOW GLASS NUMBER (NG) 30 WINDOW GLASS NUMBER (NG) DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01 WINDOW SHADING FACTOR (SHD) 5.900000E-01 WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1361.0 596.0 .0 610.0
WINDOW AREA SQFT (AWND) 127.0 28.0 .0 35.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 12.7 2.8 .0 3.5
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0 WALL DATA

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	.245
WALL TRANSFER FUNCTIONS				
CN FACTORS	.01837	.01837	.01837	.01837
CN FACTORS NUMBER OF BN FACTORS (NB	5	5	5	5
BN FACTORS BN (BN)				
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00283	.00283	.00283
N=3	.01017	.01017	.01017	.01017
N=4	.00498	.00498	.00498	.00498
N=5	.00037	.00037	.00037	.00037
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	*****	*****	******	*****
N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	*****
DOOR ADDA CORM (ABOR) 2901	იიიიიი			
ROOF AREA SQF1 (AROF) ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	F) 5.00	0000E-02		
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	2.4239	13E-02		
DOOR D TIDANGEED WIINCTIONS IRAK	1			
.136E-02 .140E-01 .848E-02	.380E-03	543.	543.	
POOR D TRANSFER FUNCTIONS (DNR)			
1.00600 .822E-01	300E-03	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	00000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	OOE+OO	
area at bac bith/DDD /NC\				
SKYLIGHT SHADING COEFFICIENT (SHSK) 0	.000000E+0	0	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK (MST	', NDST)	. 1	1
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	DND)	1	1
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	0.00000E+	00	202000	
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)	1.	292998 1 202009	
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	ON)	7.525220	.e_∩1
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	2.800000	E-OI

-----INTERNAL GAINS AND PROFILES ------

THERMOSTAT SET POINT DEG F

					101111	
	KW -		- BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	5.	25544.	5400.	4400.		
HOUR	HC	URLY FRAC	TION OF PE	AK		_
1	.100	.100	.000	.000	60.0	.0
2	.100	.100	.000	.000	60.0	.0
3	.600	.400	.400	.400	60.0	.0
4	1.000	.600	.600	.600	60.0	.0
	1.000	.800	.800	.800	60.0	.0
5			1.000	1.000	60.0	.0
6	1.000	.800				
7	1.000	.800	1.000	1.000	60.0	.0
8	1.000	.800	1.000	1.000	60.0	.0
9	1.000	.800	1.000	1.000	60.0	.0
10	1.000	1.000	1.000	1.000	60.0	.0
11	1.000	1.000	.800	.800	60.0	.0
12	1.000	.800	1.000	1.000	60.0	.0
12	1.000	• 500	2.000			

13 14 15 16 17 18 19	1.000 .600	.600 .600 1.000 1.000 1.000 .600	.500 .500 1.000 1.000 1.000 1.000	.500 1.000 1.000 1.000 1.000	60.0 60.0 60.0 60.0		.0
21	.100	.100	.000 .000	-	60.0		.0 .0
22	.100	.100	.000	.000	60.0		.0
23 24	.100 .100	.100	000	. 000	60.0		.0
NO HEAT?	ING ABOVE AM	BIENT TEMP	OF (THLK	OT) (50.000000		
NO COOL	ING ABOVE AMI	BIENT TEMP	OF (TCLK	OT) 10	00.00000		
SYSTEM T	TYPE, (IECN)		2				
SUPPLY A	AIR CFM (SACI	FM) 16500	0.000000				
ECONOMI	ZER HIGH TEM	P LIMIT F	100.0	1 00000			
SYSTEM S	SUPPLY AIR ST	LUD LIME H	2 24	.000000			
SYSTEM N	MIXED AIR TEN	(P(TMXAIR)	65.0	00000			
MIN OUTS	SIDE AIR FRAC	CTION OF SE	ACFM (OAFR) 1	1.000000		
TAN FEFT	CTENCY (REAL	v) 5.500	0000E-01				
FAN TOTA	AL PRESSURE	IN. WATER	(DP)	1.00000	0000		
HEATING	PLANT RATED PLANT RATED	OUTPUT BT	J (HFLOT)	1410813.00	00000		
HEATING	PLANT RATED	OAD VS FR	C OF INPU	T TABLE (I	PLH)		
.100		.200	.286	.300	.369	.400	.451
	·						
.500	.537	.600	.625	.700	.718	.800	.812
.900 CHILLER	TYPE / TTYPCE	1.00 H)	4	1 0000	20 T 10		
COOLING	PLANT RATED	OUTPUT BTU	(CFLOT)	1.00000)と+UU)のを-IO		
COOLING	PLANT RATED PLANT PART I	INPUT DIO	(CLTIII)	0.000000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
*000				.000	.000	.000	.000
•000	.000						
.000	.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000				

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-4.I

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD W

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOR AND				VENT AND	
MNTH	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW	INFL	LATENT
	0.						0.	0.	0.	0.
0.11	-240.			-4.	-4.		-8.	-2.	-257.	0.
										_
FEB	0.	GAIN	4.	0.	0.	0.	1. -6.	ο.	0.	0.
	-197.	LOSS		-3.	-3.	0.	-6.	-2.	0. -215.	0.
					_	_	_	_	•	•
MAR	0.	GAIN	4.	0.	0. -3.	0.	<u>.</u>	0.	100	0.
	-174.	LOSS		-3.	-3.	0.	-5.	-2.	-198.	0.
				0.7	0.1	00	2 62	01	22	.00
			4.34	.27	.01 -1.79	.00	2.03	- 90 -	-99 96	.00
	-58.76	LOSS		-1.90	-1.79	.00	-2.35	30	00.70	•00
142.17	00	CATN	4 70	30	.01	. 00	3.61	.01	1.26	.00
	-14.36		4.70	-1 30	-1.21	.00	-1.12	58 -	-50.24	.00
	-14.30	TOSS		1.50	4.21					
TIIN	00	CATN	4.70	. 44	.01	.00	3.76	.01	.98	.00
5014	10		4.70	-1.18	-1.13	.00	-1.01	55 -	-34.36	.00
	• • • •									
JUI.	.00	GAIN	4.77	.49	.01	.00	3.79	.01	1.20	.00
	01			-1.26	-1.19	.00	-1.22	59 -	-36.58	.00
AUG	.00	GAIN	4.34	.42	.01 -1.06	.00	3.59	.01	.96	.00
	.00	LOSS		-1.19	-1.06	.00	94	52 -	-36.13	.00
								01	1 40	.00
	.00		3.90	.23	.02	.00	2.80	.01	1.49	.00
	-12.17	LOSS		-1.52	-1.30	.00	-1.41	04	-44.31	.00
			2.60	- 11	.01	00	1 20	00	73	.00
			3.60	_1 00	-1.60	.00	-2 38	78 -	-84.46	.00
	-54.13	FOSS		-1.50	-1.00	.00	2.50	.,0	01110	
NO17	0.	CATN	2	0	0.	٥.	1.	0.	0.	0.
	-124.		٥.		-2.		-4.	-1.	-147.	0.
	-124.	FO22		-3.	2.	٠.				
DEC	0.	CATN	3.	٥.	0.	0.	0.	0.	0.	0.
DEC	-268.	LOSS	٠.	-4.	0. -4.	o.	-9.	-2.	-283.	0.
ጥርጥ	0.	GAIN	48.	2.	0. -26.	0.	25.	0.	8.	0.
101	-1142.	LOSS		-28.	-26.	0.	-43.	-13	-1475.	0.
										_
				8650.	BTUH ON	DEC 18	HOUR 9	AMB]	ENT TEM	P 3.
MAX	COOLING	LOAD=		0.	BTUH ON	DEC 31	HOUR 24	AMB:	LENT TEM	P 42.

ZONE UA BTU/HR-F 977.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-4.I

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD

									FAN	TOTAL
INTERNA	INTE:	RNAL :	URE F			COIN- CIDENT	LIGHTING THOUSAND		HEAT MILLION	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	BTU	БТО
JAN	60.	68.	59.	4 29	13 2		2.87	40.44	8.32	31.98
FEB	61.	77.	59.	17 2	18 2		2.60	36.53	6.79	28.16
MAR	64.	87.	59.	11 14	19 2		2.87	40.44	7.08	30.74
APR	68.	95.	60.	29 11	19 2		2.78	39.14	6.24	29.13
MAY	73.	104.	60.	27 11	19 2		2.87	40.44	6.67	30.33
JUN	81.	106.	60.	24 19	19 2		2.78	39.14	6.06	28.95
JUL	85.	116.	60.	15 10	19 4		2.87	40.44	6.35	30.01
AUG	83.	111.	62.	12 24	19 24		2.87	40.44	6.63	30.29
SEP	77.	111.	60.	2 26	19 2		2.78	39.14	5.83	28.73
OCT	68.	94.	60.	14 11	19 1		2.87	40.44	6.69	30.35
NOV	64.	84.	59.	17 2	19 24		2.78	39.14	6.85	29.75
DEC	62.	80.	54.	23 18	19 7		2.87	40.44	6.74	30.40
YEAR							33.84	476.17	80.25	358.83

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-4.I

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		OURS WHE NOT MET OLING	N MAXIMUM BTU HEATING	
MONTH	IIBATING	Doomonia				
JAN	653	0	0	0	1055E+07	.0000
FEB	533	0	0	0	9225E+06	.0000
MAR	527	Ō	0	0	8295E+06	.0000
APR	263	Ö	Ö	0	5626E+06	.0000
MAY	118	Ô	Ō	0	3923E+06	.0000
JUN	5	Õ	Ö	Ō	4361E+05	.0000
JUL	1	Õ	Ō	0	-7715.	.0000
AUG	ō	Õ	Ö	0	.0000	.0000
SEP	110	Ô	Ö	0	2662E+06	.0000
OCT	311	Õ	Ö	Ō	4868E+06	.0000
NOV	420	Õ	Ö	Ō	7936E+06	.0000
-	557	Õ	11	Ö	1129E+07	.0000
DEC	3498	0	11	Ö	1129E+07	.0000
YEAR	3490	U		Ū		

SYSTEM TOTALS

		ENERG	Y CONSUMPT		TOTAL INTERNAL MAXIMUM				
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND		
MONTH		KWH	KWH	BTU	KWH	BTU	KW		
JAN	368.76	.00	2.87	40.44	2.44	31.98	8.7		
FEB	300.08	.00	2.60	36.53	1.99	28.16	8.7		
MAR	273.42	.00	2.87	40.44	2.07	30.74	8.7		
APR	107.50	.00	2.78	39.14	1.83	29.13	8.7		
MAY	37.53	.00	2.87	40.44	1.95	30.33	8.7		
JUN	1.34	.00	2.78	39.14	1.77	28.95	8.7		
JUL	.27	.00	2.87	40.44	1.86	30.01	8.7		
AUG	.00	.00	2.87	40.44	1.94	30.29	8.7		
SEP	32.52	.00	2.78	39.14	1.71	28.73	8.7		
OCT	112.60	.00	2.87	40.44	1.96	30.35	8.7		
NOV	201.86	.00	2.78	39.14	2.01	29.75	8.7		
DEC	379.67	.00	2.87	40.44	1.98	30.40	8.7		
YEAR	1815.56	.00	33.84	476.17	23.51	358.83	8.7		

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 654424. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630A-4.I

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYSTEMP. DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1055E+07
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	9225E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.0000	8295E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	5626E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	3923E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.0000	4361E+05
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.0000	-7715.
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	.0000
SEP	1800.	1330.	1.000	68.	0.	٥.	0	0	.0000	2662E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	4868E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	7936E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	11	.0000	1129E+07

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD ----- PROGRAM CONTROL OPTIONS -----COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC) WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000 LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1 SKY CLEARNESS FACTOR (CLN) 9.700000E-01 NUMBER OF ZONES (NZ) 1 NUMBER OF ZONES (NZ) WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW) ----- SITE AND BUILDING DATA -----*****REAL WEATHER FROM DISK****** FILE NAME MO YEAR 1955 STATION 13995 SITE LATITUDE DEG (AL1) 37.750000 ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000 20.000000 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
TOURS OF BUILDING MASS (TO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 40515.000000 FLOOR AREA (SQFT) 3801.000000 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1128650.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 76020.000000 CONSTANT INFILTRATION RATE CFM (CFMI) 357.000000 INFILTRATION PROFILE .000 1.00 1.00 1.00 1.00 1.00 1.00 1.00 .000 .000 .000 .000 .000 .000 .000 1.00 1.00 1.00 1.00 1.00 1.00 1.00 A FACTOR IN INFILTRATION EQUATION (CINA) 5.290000E-01 B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02 C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03 B FACTOR IN INFILTRATION EQUATION (CINC)
C FACTOR IN INFILTRATION EQUATION (CINC)
24800.00000 BUILDING THERMAL MASS MCP BTU/F (CMCP) BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 159.000000 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 41.000000
WINDOW GLASS NUMBER (NG) 30 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01 WINDOW SHADING FACTOR (SHD) 5.900000E-01 WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

WALL DATA

2 3 4
4
7
90.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
180.00
90.00
90.00
180.00
90.00
90.00
180.00
90.00
90.00
180.00
90.00
90.00
90.00
180.00
90.00
90.00
90.00
180.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90.00
90. WALL DATA

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
H VALUE BTU/(HR-SOFT-F) (UW)	.245	.245	.245	.245
WALL TRANSFER FUNCTIONS				
CN FACTORS	.01837	.01837	.01837	.01837
CN FACTORS NUMBER OF BN FACTORS (NB	5	5	5	5
BN FACTORS BN (BN)				
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00283	.00283	.00283
N=3	.01017	.01017	.01017	.01017
N=4	.00498	.00498	.00498	.00498
N=5	.00037	.00037	.00037	.00037
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6	*****	*****	*****	*****
NUMBER OF DN FACTORS (ND)	5	5	5	5
N=1	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	*****	*****	*****	*****
ROOF AREA SOFT (AROF) 3801	.000000			
			_	
POOR TRANS FUNCTIONS USED (1=Y)	ES. O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	2.4239	13E-02		
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR)		- 40	
.136E-02 .140E-01 .848E-02	.380E-03	543.	543.	
ROOF D TRANSFER FUNCTIONS (DNR)		000	
1.00600 .822E-01	300E-03	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00	000	
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.	000000E+00)		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00	000000000000000000000000000000000000000		
SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	0.000	00E+00	
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	004400	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	CC)	. 000000±0	0	
SKYLIGHT SHADING COEFFICIENT (SHSK) U	NDETA	1	1
SUMMER START MONTH AND DAY FOR	nch (Mar Mundi	' INDST)	1	1
SUMMER END MONTH AND DAY FOR S	O OOOOOOET	ן שאטו	-	•
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	U.UUUUUUET	1	292998	
DAYTIME SKY LIGHT U BTU/SQFT-H	TAD & \GAA V-t (9VIA)		1.292998	
FRACTION OF PROCESS HEAT TO IN	-UV-L (OVI	CF /FAD	2 800000	E-01
FRACTION OF PROCESS HEAT TO IN	TEKNAT SAN	CE (FMF)	2.00000	_ 01

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	5.	25544.	5400.	4400.		
HOUR	HO	OURLY FRAC	TION OF PE			_
1	.100	.100	.000	.000	60.0	.0
2	.100	.100	.000	.000	60.0	.0
3	.600	.400	.400	.400	60.0	.0
4	1.000	.600	.600	.600	60.0	.0
5	1.000	.800	.800	.800	60.0	.0
6	1.000	.800	1.000	1.000	60.0	.0
7	1.000	.800	1.000	1.000	60.0	.0
8	1.000	.800	1.000	1.000	60.0	.0
9	1.000	.800	1.000	1.000	60.0	.0
10	1.000	1.000	1.000	1.000	60.0	.0
11	1.000	1.000	.800	.800	60.0	.0
12	1.000	.800	1.000	1.000	60.0	.0

SYSTEM :	1.000 1.000 1.000 1.000 1.000 1.000 1.000 .100 .100 .100 .100 .100 ING ABOVE AMI	.600 1.000 1.000 1.000 .600 .300 .100 .100 .100 .100 sient temp	.500 .500 1.000 1.000 1.000 .500 .000 .0	1.000 .500 .000 .000	60.0 60.0 60.0 60.0 60.0 60.0 60.0		.0
ECONOMI:	ZER HIGH TEMI	P LIMIT F	100.00	00000			
SYSTEM S	SUPPLY AIR ST	TART TIME I	HR 24	.000000			
			75 01	1000			
MIN OUTS	SIDE AIR FRAC	CTION OF S	ACFM (OAFR)) 1	.000000		
	ICIENCY (EFAI AL PRESSURE						
HEATING	PLANT RATED	OUTPUT BT	J (HFLOT)	[128650.00	0000		
HEATING	PLANT RATED PLANT PART I	INPUT BTU	(HFLIN)	[410813.00 r Table (P	T.H.)		
	.191	.200	.286	.300	.369	.400	.451
						.800	.812
.500	.537	.600	.625	. 700	• / 10	••••	
.900	.906	1.00	1.00				
CHILLER	TYPE (ITYPCH PLANT RATED	i) Ourrie Bri	4 I (CFLOT)	1.00000	OE-10		
COOLING.	PLANT RATED	INPUT BTU	(CFLIN)	0.000000	E+UU		
COOLING	PLANT PART I	LOAD FRAC V	VS FRAC RAT	TED COP (P	LC)	.000	.000
.000	.000	.000	.000	.000	.000	.000	
.000	.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000				

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTE	I LOAD		SOLAR THRU WINDOW		PARTITN DOOR AND SLAB		WALL	VENT AND WINDOW INFL	LATENT
JAN	0. -242.	GAIN	3.	0.	0.	ο.	0.	0. 0. -2259.	0. 0.
FEB	0. -199.	GAIN LOSS	4.	0. -3.	0. -3.	0. 0.	0. -6.	0. 0. -2217.	0. 0.
MAR	0. -176.	GAIN LOSS	4.	0. -3.	0. -3.	0. 0.	1. -5.	0. 0. -2200.	0. 0.
	.00 -59.61	GAIN LOSS	4.34	.27 -1.87	.01 -1.76	.00	2.65 -2.27	.01 .87 88 -90.10	.00
	.00 -14.77		4.70		.02 -1.16		3.66 -1.01	.01 1.26 56 -50.92	.00
JUN	.00 11		4.70	.44 -1.13	.01 -1.08	.00	3.80 89	.01 .98 53 -34.70	.00
JUL	.00 01		4.77	.50 -1.21	.01 -1.13	.00	3.83 -1.08	.01 1.20 56 -36.86	.00
AUG		GAIN LOSS	4.34	.43 -1.14	.01 -1.01	.00	3.64 82	.01 .95 49 -36.42	.00
	.00 -12.50		3.90	.24 -1.47	.02 -1.24	.00	2.85 -1.28	.01 1.47 62 -45.00	.00
	.00 -54.99		3.60	.11 -1.95	.01 -1.56	.00	1.92 -2.28	.00 .72 76 -85.57	.00
	0. -126.		3.	0. -3.	0. -2.	o. o.	1. -4.	0. 0. -1149.	0. 0.
DEC	0. -271.	GAIN LOSS	3.	0. -4.	0. -4.	0. 0.	0. -9.	0. 0. -2285.	0. 0.
TOT	0. -1155.	GAIN LOSS	48.	3. -28.	0. -25.	o. o.	25. -42.	0. 8. -121490.	0. 0.
MAX MAX	HEATING COOLING	LOAD=	-112	8650. 0.	BTUH ON D BTUH ON D	EC 18 EC 31	HOUR 9 HOUR 24	AMBIENT TEMI	P 3.

ZONE UA BTU/HR-F 977.8

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD WO

									FAN	TOTAL
INTERNA	INTE	PERAT		DAV		COIN- CIDENT	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	HK	AMBT.	KWI	B10	510	
JAN	60.	68.	59.	4 29	13 2		2.87	40.44	8.28	31.94
FEB	61.	77.	59.	17 2	17 2		2.60	36.53	6.75	28.12
MAR	63.	87.	59.	11 14	18 2		2.87	40.44	7.08	30.74
APR	68.	94.	60.	29 9	19 2		2.78	39.14	6.37	29.27
MAY	73.	103.	60.	27 11	19 2		2.87	40.44	6.67	30.33
JUN	80.	105.	60.	24 19	19 2		2.78	39.14	6.06	28.95
JUL	85.	115.	60.	15 10	19 5		2.87	40.44	6.35	30.01
AUG	83.	110.	62.	12 24	19 24		2.87	40.44	6.63	30.29
SEP	77.	110.	60.	2 26	18 2		2.78	39.14	5.83	28.73
OCT	67.	92.	60.	14 11	19 1		2.87	40.44	6.79	30.45
NOV	64.	84.	59.	17 2	19 24		2.78	39.14	6.84	29.74
DEC	61.	79.	53.	23 18	19 7		2.87	40.44	6.81	30.47
YEAR							33.84	476.17	80.47	359.04

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING		HOURS WHEN	MAXIMUM TE	
MONTH	HEATING	ECONOMIZER	HEATING CO	OOLING	HEATING	COOLING
JAN	650	0	0	0	1077E+07	.0000
FEB	530	0	0	0	9416E+06	.0000
MAR	528	0	0	0	8468E+06	.0000
APR	275	0	0	0	5748E+06	.0000
MAY	118	0	0	0	4008E+06	.0000
JUN	6	0	0	0	4773E+05	.0000
JUL	i	0	0	0	-9153.	.0000
AUG	Ō	0	0	0	.0000	.0000
SEP	110	Ō	0	0	2719E+06	.0000
OCT	319	Ö	0	0	4969E+06	.0000
NOV	420	0	0	0	8096E+06	.0000
DEC	563	Ō	12	0	1129E+07	.0000
YEAR	3520	Ō	12	0	1129E+07	.0000

SYSTEM TOTALS

		ENERG	Y CONSUMPT			OTAL INTERNAL	
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH		KWH	KWH	BTU	KWH	BTU	KW
JAN	370.50	.00	2.87	40.44	2.43	31.94	8.7
FEB	302.47	.00	2.60	36.53	1.98	28.12	8.7
MAR	274.98	.00	2.87	40.44	2.07	30.74	8.7
APR	110.04	.00	2.78	39.14	1.87	29.27	8.7
MAY	38.07	.00	2.87	40.44	1.95	30.33	8.7
JUN	1.61	.00	2.78	39.14	1.77	28.95	8.7
JUL	.27	.00	2.87	40.44	1.86	30.01	8.7
AUG	.00	.00	2.87	40.44	1.94	30.29	8.7
SEP	32.79	.00	2.78	39.14	1.71	28.73	8.7
OCT	115.28	.00	2.87	40.44	1.99	30.45	8.7
NOV	205.00	.00	2.78	39.14	2.00	29.74	8.7
DEC	382.13	.00	2.87	40.44	2.00	30.47	8.7
YEAR	1833.15	.00	33.84	476.17	23.58	359.04	8.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 659108. BTU/(SQFT-YEAR)

BLDG 630 - MESS HALL KITCHEN AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD WO

OTHER MONTHLY STATISTICS

MONTE	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT-	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1077E+07
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	9416E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.0000	8468E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	5748E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	4008E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.0000	4773E+05
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.0000	-9153.
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.0000	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.0000	2719E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	4969E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	8096E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	12	.0000	1129E+07

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

05-Mar-93

BUILDING NO.:

630Z2

BLDG TYPE:

MESS HALL (DINING)

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	753.1	507.0	465.4	465.4	656.6	709.7
COOLING (kWH)	37410	29430	27730	26400	37190	36580

SUPPLY AIR FAN	14000 CFM
FLOOR AREA	7190 FT ²
CFMI	700 CFM
UA	2642 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

IOLIDO OF	OCCUPANCY			ANNUAL HEATING & COOLING HOURS		
	500	1900	70 HR	HR. ON HEATING	2548 HR/YR	
И-F	500	1900	14 HR	HR. ON COOLING	1708 HR/YR	
SAT.		1900	14 HR	HR. OFF HEATING	1820 HR/YR	
SUN	500		98 HR/WK	HR. OFF COOLING	1220 HR/YR	
		TOTAL OCCUPY HR. TOTAL UNOCC. HR.		1111.011.00020		
	ANNUAL OCC		70 HR/WK 5110 HR/YR	1		
	ANNUAL UNC		3650 HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 2548 = 1820 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 1708 = 1220 HR/YR

HOAUHC	753.1 MBtu -	656.6 MBtu	=	3.78E+01 Btu/CFM-HR	
,,0,,0,,	700 CFM *	3650 HR/YR			
HOAUH	753.1 MBtu -	656.6 MBtu	=	7.57E+01 Btu/CFM-HR	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	700 CFM *	1820 HR/YR			
COAUHC	37410 kWH -	37190 kWH	=	8.61E-05 kWH/CFM-HR	
• • • • • • • • • • • • • • • • • • • •	700 CFM *	3650 HR/YR			
COAUC	37410 kWH -	37190 kWH	=	2.58E-04 kWH/CFM-HR	
	700 CFM *	1220 HR/YR			
HOAOHC	753.1 MBtu -	709.7 MBtu	=	1.21E+01 Btu/CFM-HR	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	700 CFM *	5110 HR/YR			
НОАОН	753.1 MBtu -	709.7 MBtu	=	2.43E+01 Btu/CFM-HR	
,,,,,,,,,	700 CFM *	2548 HR/YR			
COAOHC	37410 kWH	36580 kWH	=	2.32E-04 kWH/CFM-HR	
00/10/19	700 CFM *	5110 HR/YR			
COAOC	37410 kWH	36580 kWH	=	6.94E-04 kWH/CFM-HR	
30/100	700 CFM *	1708 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
	1/6 (10 MINUTES PER		=	0.17	

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

AJN

CHECKED BY:

05-Mar-93

DATE: BUILDING NO .:

630Z2

BLDG. TYPE: MESS HALL (DINING)

ENERGY CONSTANT CALCULATIONS

ECC	27730 kWH -	26400 kWH	=	5.56E-05 kWH/CFM-HR
	14000 CFM *	1708 HR/YR		
ECHC	27730 kWH -	26400 kWH	=	1.86E-05 kWH/CFM-HR
	14000 CFM *	5110 HR/YR		
NSUCHO	37410 kWH -	29430 kWH	=	1.56E-04 kWH/CFM-HR
	14000 CFM *	3650 HR/YR		
NSUCC		29430 kWH	=	4.67E-04 kWH/CFM-HR
	14000 CFM *	1220 HR/YR		
DDCCHC		27730 kWH	=	2.38E-05 kWH/CFM-HR
	14000 CFM *	5110 HR/YR		
DDCCC		27730 kWH	=	7.11E-05 kWH/CFM-HR
	14000 CFM *	1708 HR/YR		
NSC		507.03 MBtu	<u> </u>	9.31E+04 Btu/UA
	2642	UA		
DSC	507.03 MBtu -	465.43 MBtu	=	1.57E+04 Btu/UA
	2642			
OPT	(2 HR/DAY X 272 DAY	/YR) - 294	HR/YR	
	(=	250 HR/YR
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)	
	(3.2.2.2	-	=	13.9 kWH/TON
OAR	506 HR/YR *	0.01	=	5.06 HR/YR
J. Committee]			
1				

22-Feb-93 E M C ENGINEERS, INC. DATE: BHS BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204.000 JOB: CLIENT CONTRACT NO .: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 630Z2BHL FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 630 BLDG NAME: MESS HALL - ZONE 2 BLDG NO: **BLDG FUNCTION: DINING AREA** # FLOORS FLOOR AREA: (SQ. FT) 7,190 SLAB PERIMETER: (FT) 257 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL EAST SOUTH NORTH 1,678 1,678 4,886 0 1,530 WALLS, GROSS (SQ. FT) 356 128 144 84 0 (SQ. FT) **GLASS** 126 63 0 63 0 (SQ. FT) PERSONNEL DOOR 400 400 800 0 0 INSULATED PANEL (SQ. FT) 1,087 3,604 1,071 (SQ. FT) 1,446 0 WALLS, NET (SQ. FT) 7,190 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 800 PERSONNEL DOOR (SQ. FT) 126 **INSULATED PANEL** (SQ. FT) 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.170.43 4" FACE BRICK 0.91 3. AIR SPACE 4" FACE BRICK 1.89 4 6" CMU 5. AIR SPACE 6 6" CMU 0.68 INSIDE AIR FILM TOTAL R-WALL = 4.08 0.245 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM 2. BUILT UP ROOF 0.34 BUILT-UP ROOF 3. 1.5' INSULATION 4.98 -1名"INSULATION CEILING AIR SPACE 1.00 AIRSPACE 11.00 3" INSULATION -3"BATT INSULATION **ACOUSTIC TILE** 1.79 6 SSASSANTA TO TRUE STANTANT OF THE INSIDE AIR FILM 0.68 ACOUSTIC TILE 19.95 TOTAL R-ROOF = 0.050 U=1/RR-GLASS 1.61 PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. **GLASS TYPE:** SLF 0.83 CEMENT SLAB TYPE FLOOR: R-BASEM 0.00 NONE **BASEMENT TYPE:** 4.20 R-PANEL INSULATED PANEL: R-PDOOR 2.56 PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0 0.000 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 562 0.115 X CFM / SQ.FT. 4886 AVG. WALL H/M/L (SQ.FT.) n X CFM / SQ.FT. 0.000 = LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 = DOOR OPENINGS / HR - SINGLE DOOR 139 X CFM /OPENING /HR 1.385 = DOOR OPENINGS / HR - DOUBLE DOORS 700 TOTAL INFILTRATION (CFM) = 190 0.238 X PANEL 'U' = **UA PANEL** = PANEL AREA 800 0.391 49 X DOOR 'U' = = PDOOR AREA 126 **UA PDOOR** 883 X WALL "U" 0.245 = WALL AREA 3,604 **UA WALL** 360 X ROOF 'U' 0.050 7,190 **UA ROOF** = ROOF AREA 221 0.621 X GLASS 'U' **UA GLASS** = GLASS AREA 356 X SLF 0.830 213 = SLAB PERIM. 257 **UA SLAB** 0 X BASE. "U" 0.000 0 UA BASEM. =B-WALL AREA 725 X A. T. F. 1.035 = CFM 700 INFILTRATION = 2,642 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

ZONE 03 – Feb – 93 BHS CEL 630 22 630 3204-000 EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

N

			Rates of Heat Gain from Occupants of Conditioned Spaces	s of Conditione	dSpaces			
Zone	No. of	Activity	1	Typical	Sensible		TOT Sen. TOT. Lat	TOT. Lat
Š	People	Type	Degree of Activity	Application	(B10/H)	(BIU/H)	Ш	
9	240	3	Seated Fating	Restaurant	225	325	2	$^{\prime}$
1	Ç		Standing light work or walking slowly	Retail store, bank	270	220	2,700	2200
	2	,	, a					
						TOTAL	700 SZ	56 700 RO 200
TOTAL	250					ואוא	20,100	22-22

No. of Fixtures Type Description 32 18 Incandescent – 60w 68 6 Fluorescent, 2 – 34w lamps, 16w ballast (2x4 ft. fixture)				Peak Wattage Value for Lights		
Fixtures Type Description 32 18 Incandescent – 60w 68 6 Fluorescent, 2 – 34w lamps, 16w ballast (2x4 ft. fixture)	Zone	No. of	Fixture			
89	-	Fixtures	Type	Description	Watts/Fixture Total Wattage	Total Wattage
88	2	32		Incandescent - 60w	09	
Ş		89	9	Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	5,712
	•					
	TOTAL	100			TOTAL	7,632

			Peak Value for Internal Gains				
Zone	Jo on	Fallin			Heat Gain		Total
2	Fairingen Type		Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
	0	86	cemaker	1,089	251%	2,178	7,434
1			Coffee Maker	1,500	%06	3,000	10,239
	1 6.		74 Cabinet (large hot holding)	2,080	14%	6240	21,297
	0		25 Cold Food/Beverade	1,535	20%	3,070	10,478
	ı		93 Toaster (I arde non-un) 10 sice	5297	100%	15,891	54,236
	0		Food Warner (infrared build), per lamp	249	100%	498	1,700
	4	8	Display case (refrigerated), per cu. ft.of interior	45	40%	180	614
							- 1
				TOTAL	81%	31,057	105,998

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

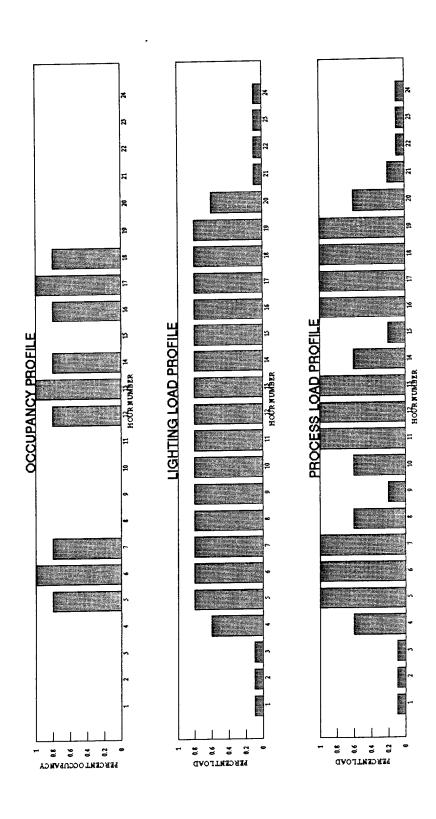
BLDG TYPE

EMC NO.:

3204 – 000 03 – Feb – 93 BHS CEL 630 Z2 Date:
Prepared By:
Checked By:
File:
Bldg:
Zone:

830

BLDG	TYPE OF										I	HOUR NUMBER		BER										
FUNCTION	NCTION PROFILE	_	2	က	4	2	9	7	8	6	9	8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	12	5	14	15	9	7	8	8	2	8	33	_
Mess Hall	OCCUPANCY		L			0.8	F	0.8		Ī	H	۲	9.0	-	0.8	0	0.8	1 0.8	80	L	Ц			Н
	LIGHTING	0	0	0	9.0	0.8	9.0	0.8	0.8	0.8	0.8	0.1 0.1 0.1 0.6 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	86	8 (0.80	8	8	8	.0	8 0.6	3.0.1	0.1	0.1	_
	PROCESS	5	C	0	0 8	-	-	-	90	00	90	-	-	-	9.0	2	-	-	-	1 0.6	0.2	0.1	0	_



MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0 .243
U VALUE BTU/(HR-SQFT-F) (UW)	. 245	. 243	.243	V = V =
WALL TRANSFER FUNCTIONS	01837	.01822	.01837	.01822
CN FACTORS NUMBER OF BN FACTORS (NB	.01637	5	5	5
NUMBER OF BN FACTORS (NB	3	•		
BN FACTORS BN (BN)	00003	.00003	.00003	.00003
N=1	.00283	.00280	.00283	.00280
N=2	.01017	.01008	.01017	.01008
N=3	.00498	.00494	.00498	.00494
N=4	.00037	.00036	.00037	.00036
N=5	****	****	*****	*****
NUMBER OF BN FACTORS (ND) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF BN FACTORS (ND)	5	5	5	5
DN FACTORS	_			
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=1 N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=2 N=3	.65654	.65654	.65654	.65654
N=3 N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	****
DOOR ADEA CORT (APOR) 7190	.000000			
DOOR IT WATTER BUIL/HR-SOFT-F (UR	F1 5.00	0000E-02		
THE THE PROPERTY OF THE PROPER	M.S. UENUI	(TKOOL)	1	
ROOF TRANSFER FUNCTION (CNR)	2.4239	13E-02		
ROOF B TRANSFER FUNCTIONS (BNR)			
ROOF B TRANSFER FUNCTIONS (BNR .136E-02 .140E-01 .848E-02	.380E-03	543.	543.	
1 00 - 600 .822E-01	300E-03	999.	999.	
OTAL TOUR BILD DECDERS (TILT)	0.000000)E+UU		
CEVITCUT ASTMITH ANGLE DEGREES	(AZSK)	9999.000	000	
EVVITOUT UTICHT FT (SKH) U.	OOOOOOE+OL	,		
CEVITCHT WIDTH FT (SKW) 0.0	00000E+00			
ATOUT TAITH AUGDUANC WILLIAM BUT CAN	UWI U.L			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
/NC\	1			
SKYLIGHT SHADING COEFFICIENT (SHSK)).000000E+C	1	1
SUMMER START MONTH AND DAY FOR	SHSK (MST	(,NDST)	1	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	HSK (MND,	י מאמו (מאמו	1	•
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	O.OOOOOE	1	202008	
DAYTIME SKY LIGHT U BTU/SQFT-H	K-r (SKIU)	, I.	1.292998	
NIGHT TIME SKYLIGHT U BTU/SQFT	TAKTE (SKI	CF (FAD)	8.100000	E-01
FRACTION OF PROCESS HEAT TO IN	TEKNAL SPA	CE (FRF)	0.20000	

-----THERNAL GAINS AND PROFILES ------THERMOSTAT SET

POINT DEG F KW - - - - - BTU/HR - - - - -PEOPLE PEOPLE HEATING COOLING LATENT LIGHTS PROCESS SENSIBLE 8. 85858. 56700. 80200. PEAK VAL - - - HOURLY FRACTION OF PEAK - - - -HOUR .000 75.0 70.0 .100 .100 .000 1 .000 75.0 .000 70.0 .100 .100 2 .000 .000 .800 75.0 .000 70.0 .100 .100 3 .000 75.0 70.0 .600 .600 4 70.0 75.0 .800 1.000 5 75.0 1.000 .800 1.000 70.0 1.000 6 70.0 75.0 .800 .800 .800 1.000 7 75.0 .000 70.0 .000 .800 8 .600 70.0 75.0 .000 .000 .200 .800 9 .000 75.0 70.0 .800 .600 .000 10 75.0 .800 .800 70.0 .800 1.000 11 75.0 70.0 1.000 1.000 1.000 .800 12

```
75.0
                                   .800
                                                           70.0
                                              .800
                       1.000
              .800
  13
                                                                       75.0
                                              .000
                                                           70.0
                                   .000
                        .600
              .800
  14
                                                                       75.0
                                              .000
                                   .000
                                                           70.0
              .800
                         .200
  15
                                                                       75.0
                                   .800
                                              .800
                                                           70.0
              .800
                       1.000
  16
                                                           70.0
                                                                       75.0
                                  1.000
                                             1.000
                       1.000
              .800
  17
                                                                       75.0
                                              .800
                                                           70.0
                       1.000
                                   .800
              .800
  18
                                                                       75.0
                                              .000
                                                           70.0
              .800
                                    .000
                       1.000
  19
                                                                       75.0
                                                           70.0
                                    .000
                                              .000
              .600
                        .600
  20
                                                                       75.0
                                                           70.0
                                   .000
                                              .000
                         .200
              .100
  21
                                                                       75.0
                                               .000
                                                           70.0
                         .100
                                   .000
              .100
  22
                                                                       75.0
                                               .000
                                                           70.0
                         .100
                                   .000
              .100
  23
                                                                       75.0
                                   .000
                                               .000
                                                           70.0
                         .100
              .100
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
                                                    60.000000
                                                    60.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                               2
SYSTEM TYPE, (IECN)
                          14000.000000
SUPPLY AIR CFM (SACFM)
                                    65.000000
ECONOMIZER HIGH TEMP LIMIT F
                                     0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
                                       24.000000
SYSTEM SUPPLY AIR STOP TIME HR
                                      60.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E
FAN TOTAL PRESSURE IN. WATER (DP)
                         5.500000E-01
                                              1.500000
HEATING PLANT RATED OUTPUT BTU (HFLOT) 936800.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 1171000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                             .451
                                                       .369
                                                                  .400
                                            .300
                                  .286
                       .200
 .100
            .191
                                                                             .812
                                             .700
                                                                   .800
                                                        .718
                       .600
                                  .625
            .537
 .500
                                  1.00
            .906
                       1.00
 .900
                                  0
CHILLER TYPE (ITYPCH)
                                            836640.000000
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                            154670.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                        .310
                                                                   .400
                                                                              .370
                       .200
                                             .300
                                  .250
 .100
            .200
                                                                              .760
                                             .700
                                                        .650
                                                                   .800
                                  .550
            .450
                       .600
  .500
                       1.00
                                  1.00
            .880
  .900
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTITI DOOR AND				VENT AND	* > MENT
митн	LOAD		WINDOW	ROOF	AND SLAB 0.	BSMT	WALL	MINDOM	INFL	LATENT
JAN	0.	GAIN	5.	0.	0. -7.	0.	0.	o.	111	0.
0	-79.	LOSS		-11.	-7.	0.	-24.	-5.	-111.	0.
FEB	.20 -59.99	GAIN LOSS	6.30	.00	.00 -5.98	.00	.01 -18.13	.00 -4.29	.00 -95.82	.08 .00
MAR	6.72 -45.15	GAIN LOSS	7.96	.09 -8.08	.00 -5.59	.00	.65 -14.47	.00 -4.00	.01 -90.47	1.34 .00
APR	32.40 -14.61	GAIN LOSS	8.53	.52 -4.98	.04 -3.36	.00	2.87 -7.11	.03 -2.41	.54 -55.10	6.70 .00
	-2.38	LOSS		-3.19	.14 -1.93	.00	-2.70	-1.04	37.12	
JUN	138. 0.	GAIN LOSS	9.	2. -2.	0. -1.	o. o.	9. -1.	0. -1.	5. -14.	58. O.
JUL	173. 0.	GAIN LOSS	10.	3. -1.	1.	0. 0.	13. 0.			
	166. 0.				1. -1.				9. -9.	
					0. -2.					
	-12.41	LOSS		-5.50	.05 -3.23		0.0.			
					.00 -4.62					
DEC	0. -75.	GAIN LOSS	4.	0. -11.	0. -7.	o. o.	0. -24.	0. -5.	0. -106.	0. 0.
	721	CATN	96	10	3.	0.	49.	2.	32.	290.
					3. -42.					
MAX MAX	HEATING COOLING	LOAD=	= -40 = 52	2660. 1827.	BTUH ON BTUH ON	DEC 18 JUL 28	HOUR 2 HOUR 17	AMI AMI	BIENT TE BIENT TE	MP 3. MP 92.

ZONE UA BTU/HR-F 1702.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERAT		DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	71.	76.	69.	4 29	13 3		3.29	46.66	11.38	74.11
FEB	71.	76.	69.	9 2	13		2.97	42.14	10.28	66.94
MAR	72.	77.	69.	12 4	13		3.29	46.66	11.38	74.11
APR	74.	77.	69.	30 9			3.18	45.16	11.01	71.72
MAY	75.	77.	70.	28 11			3.29	46.66	11.38	74.11
JUN	76.	77.	71.	27 17			3.18	45.16	11.01	71.72
JUL	76.	77.	72.	15 10		93. 3 59.	3.29	46.66	11.38	74.11
AUG	76.	77.		10	_	3 85. 3 54.	3.29	46.66	11.38	74.11
SEP	75.	77.		3	13	3 89. 3 4 1.	3.18	45.16	11.01	71.72
OCT	74.	77.		4	1.	3 83. 3 32.	3.29	46.66	11.38	74.11
NOV	72.	77.		8	. 1		3.18	45.16	11.01	71.72
DEC	71.	76.		23	1		3.29	46.66	11.38	74.11
YEAR			07.	. 10	•		38.72	549.39	134.00	872.58

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

	-	COOLING		OURS WHEN	MAXIMUM BTU	
MONTH	HEATING	INCLUDING ECONOMIZER	HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	601 476 421 185 38 0 0 0 58 189 353 559	44 62 140 291 494 597 688 688 516 323 174 33	0000000000	000000000000000000000000000000000000000	3593E+06 3171E+06 2851E+06 1853E+06 1332E+06 .0000 .0000 0000 1166E+06 1728E+06 2679E+06 4027E+06	.0000 .2008E+06 .2992E+06 .3280E+06 .3288E+06 .4758E+06 .5218E+06 .4746E+06 .4867E+06 .3787E+06 .2897E+06 .1194E+06
YEAR	2880	4050	0	0	4027E+06	.52105400

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	170.52	.00	3.29	46.66	3.33	74.11	10.6
FEB	132.96	.01	2.97	42.14	3.01	66.94	23.0
MAR	110.92	.49	3.29	46.66	3.33	74.11	26.2
APR	44.69	2.18	3.18	45.16	3.23	71.72	27.1
MAY	8.68	4.19	3.29	46.66	3.33	74.11	29.5
JUN	.00	7.89	3.18	45.16	3.23	71.72	34.1
JUL	.00	9.73	3.29	46.66	3.33	74.11	36.6
AUG	.00	9.44	3.29	46.66	3.33	74.11	34.0
SEP	13.00	6.16	3.18	45.16	3.23	71.72	34.7
OCT	43.74	2.15	3.29	46.66	3.33	74.11	29.3
NOV	89.92	.71	3.18	45.16	3.23	71.72	25.9
DEC	160.31	.04	3.29	46.66	3.33	74.11	20.6
YEAR	774.74	42.98	38.72	549.39	39.26	872.58	36.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 241580. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				0						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.	MAX SYST TEMP. D DEG. +		HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	3593E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.2008E+06	3171E+06
MAR	1864.	1216.	1.000	43.	0.	ο.	0	0	.2992E+06	2851E+06
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.3280E+06	1853E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.3838E+06	1332E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.4758E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	ο.	0	0	.5218E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.4746E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.4867E+06	1166E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.3787E+06	1728E+06
NOV	1008.	710.	1.000	47.	0.	ο.	0	0	.2897E+06	2679E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.1194E+06	4027E+06

```
BLDG 630 - MESS HALL DINING AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD, MO)
 ----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
                                                                                                                           1.000000
WEEKEND INTERNAL GAINS FACTOR (WKEND)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
 NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
   FILE NAME MO
 STATION 13995
                                         YEAR 1955
                                                                           37.750000
 SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
                                                                                                                                         20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 76646.000000
 FLOOR AREA (SQFT) 7190.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 936800.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -836640.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 71900.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 700.000000
 INFILTRATION PROFILE
                                                                                     1.00 1.00 1.00
                                                                                                                                                                        1.00 1.00
                                                          1.00
    1.00
                           1.00
    1.00 1.00 1.00 1.00 1.00
                                                                                                                                                                        1.00
                                                                                                                                                                                               1.00
    1.00 1.00 1.00 1.00 1.00 1.00 1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 5.480000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 39779.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 213.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 49.000000
WINDOW GLASS NUMBER (NG) 30
 WINDOW GLASS NUMBER (NG)
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                                                                            WALL DATA
WALL NUMBER
AZIMUTH ANGLE (AZ)

WALL AREA SQFT (AWLL)

WINDOW AREA SQFT (AWND)

WINDOW HEIGHT FT (WNDH)

WINDOW WIDTH FT (WNDW)

WIDTH OF OVERHANG (WOH)

OVERHANG HGT ABV WNDW(HOH)

MAX SOLAR WITH NO SHADE(SOLMX)

10.0

90.00

1446.0

1446.0

1487.0

144.0

84.0

128.0

10.0

10.0

10.0

10.0

10.0

0

0

0

0

0

0

0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10.0

10
 WALL NUMBER
```

U VALUE BTU/(HR-SQFT-F) (UW)	.245	.243	.245	.243	
WALL TRANSFER FUNCTIONS			01007	01000	
CN FACTORS	.01837	.01822	.01837	.01022	
NUMBER OF BN FACTORS (NB	5	5	5	3	
BN FACTORS BN (BN)	00003	00003	00003	00003	
N=1	.00003	.00003	00283	.00280	
N=2	01017	01008	.01017	.01008	
N=3	00498	.00494	.00498	.00494	
N=4	00037	.00036	.00037	.00036	
N= 5	*****	*****	*****	*****	
N=O NUMBER OF DN FACTORS (ND)	5	5	5	5	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	•	-			
N=1	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N=6	*****	*****	****	*****	
DOOR ADEA CORT (ADOR) 71	190.000000				
ROOF U VALUE BTU/HR-SQFT-F (ROOF TRANS FUNCTIONS USED ()	(URF) 5.00	0000E-02			
ROOF TRANS FUNCTIONS USED (1	=YES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CA	IR) 2.4239	13E-02			
DOOD D TOANSFED KINCHIONS IF	(NR)				
.136E-02 .140E-01 .848E-0	02 .380E-03	543.	543.		
DOOR D FRANCEED FUNCTIONS (INE)				
1.00600 .822E-0	01300E-03	999.	999.		
- CYVIICUM MIIM DECDEES (MII.T)	0.000000	E+UU		-	
SKYLIGHT AZIMUTH ANGLE DEGRE	EES (AZSK)	9999.000	0000		
EVVITOUT UFICHT FT (SKH)	0.000000E+00)			
SKYLIGHT WIDTH FT (SKW)	0.00000E+00	000000			
EVVITCUT OVERHANG WIDTH FT (SKOW: U.U		ハロロナロロ		
OVERHANG HEIGHT ABOVE SKYLIG					
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY F SUMMER END MONTH AND DAY FOF SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQFT	, /chch/ (0000008+0	00		
SKYLIGHT SHADING COEFFICIENT	TOR CUCY (MOT	NDST)	1	1	Į.
SUMMER START MONTH AND DAY FOR	CHSK (MND.N	ומאחו	1	1	
SUMMER END MONTH AND DAI FOR	1,0111) XERE) +3000000 0	-00	-		
SKY LIGHT AREA SQLI (ASAI)	-HR-F (SKYU)	1.	292998		
NICHT TIME SEVIICHT II BTII/SC	OFT-HR-F (SKY	UN)	1.292998		
FRACTION OF PROCESS HEAT TO	INTERNAL SPA	CE (FAP)	8.100000	E-01	
	DORTIF				
90.0 90.0 90.0	90.0	90.0	75.0	75.0	75.0
70.0 70.0					
75.0 75.0 75.0	75.0	75.0	75.0	75.0	75.0
73.0					
75.0 75.0 75.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT	PROFILE				=0.0
55.0 55.0 55.0	55.0	55.0	70.0	70.0	70.0
	_		50.0	70.0	70.0
70.0 70.0 70.0	70.0	70.0	70.0	70.0	70.0
		55.0	EE 0	55.0	55.0
70.0 70.0 70.0	55.0	55.0	55.0	33.0	55.0

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

PEAK VAL

KW ---- BTU/HR ---- POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

POINT DEG F

```
HOUR - - - - HOURLY FRACTION OF PEAK - - - -
                                                                  90.0
90.0
90.0
                                                                       75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                       75.0
                                                                       75.0
                                                                       75.0
                                                                       75.0
                                                                       75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                      90.0
                                                                       90.0
                                                                      90.0
                                                                      90.0
                                                         55.0
                                                                      90.0
 SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 14000.000000
 ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
SYSTEM MIXED AIR TEMP(TMXAIR)

0.000000E+00
24.000000
60.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 1.500000
HEATING PLANT RATED OUTPUT BTU (HFLOT) 936800.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 1171000.000000
 HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
          .191 .200 .286 .300 .369 .400
                                                                            .451
  .100
  .500 .537 .600 .625 .700 .718 .800
                                                                            .812
 .900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 0
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 836640.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 154670.000000
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                .400 .370
                                 .250 .300 .310
                      .200
            .200
                                 .550
                                           .700 .650
                                                                .800
                                                                            .760
                       .600
            .450
  .500
                     1.00 1.00
           .880
  .900
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-2.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTE	I LOAD	GAIN	4 72	ROOF	\sim	BSMT	WALL	- 00	.00	LATENT
	-56.40	LOSS		-9.43	-6.09	.00	-20.20			
	.20 -42.51									
MAR	6.48 -30.00	GAIN LOSS	7.96	.09 -7.23	.00 -4.96	.00	.69 -11.99	.00 -3.56	.01 -80.11	1.26 .00
APR	30.75 -7.81	GAIN LOSS	8.53	.52 -4.64	.04 -3.11	.00	2.84 -6.04	.03 -2.24	.54 -50.67	6.28 .00
MAY	63.29 57	GAIN LOSS	9.31	1.14 -3.32	.14 -2.03	.00	5.76 -2.90	.10 -1.40	1.71 -37.56	17.75 .00
JUN	121. 0.	GAIN LOSS	9.	2. -2.	0. -1.	o. o.	9. -1.	0. -1.	5. -17.	47. 0.
JUL	141.	GAIN LOSS	10.	3. -2.	1. -1.	0. 0.	11. -1.	1. -1.	11. -15.	51. 0.
AUG	134. 0.	GAIN LOSS	9.	2. -2.	1. -1.	o. o.	9. -1.	0. -1.	8. -15.	50. 0.
SEP	89.05 61	GAIN LOSS	7.04	1.08 -3.00	.35 -1.65	.00	4.89 -2.75	.25 -1.16	4.55 -27.17	33.82 .00
OCT	30.00 -5.79	GAIN LOSS	5.80	.25 -4.99	.05 -3.00	.00	1.16 -7.38	.04 -2.10	.69 -49.73	9.24
NOV	9.25 -20.50	GAIN LOSS	4.41	.02 -6.59	.00 -4.10	.00	.16 -12.56	.00 -2.87	.01 -64.54	2.71
DEC	.36 -54.01	GAIN LOSS	4.04	.00 -9.38	.00 -5.98	.00	.00 -20.58	.00 -4.23	.00 -91.49	.00
TOT	625. -218.	GAIN LOSS	86.	10. -63.	3. -39.	o. o.	44. -102.	2. -28.	32. -627.	219. 0.
MAX MAX	HEATING COOLING	LOAD=	-54 63	4704. 2203.	BTUH ON BTUH ON	DEC 18 JUL 16	HOUR 6	AMI AMI	BIENT TE BIENT TE	MP 0. MP 74.

ZONE UA BTU/HR-F 1702.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-2.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
MONTH	INTE	RNAL S PERATI MAX		DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	66.	76.	54.	4 29	13 3		3.29	46.66	11.38	74.11
FEB	67.	77.	54.	9 2	20 3		2.97	42.14	10.28	66.94
MAR	69.	78.	54.	24 4	21 3		3.29	46.66	11.38	74.11
APR	72.	81.	55.	27 1	5 3		3.18	45.16	11.01	71.72
MAY	76.	81.	58.	30 11	5 4		3.29	46.66	11.38	74.11
JUN	78.	86.	72.	30 17	5 3		3.18	45.16	11.01	71.72
JUL	79.	90.	74.	16 10	5 3		3.29	46.66	11.38	74.11
AUG	78.	89.	72.	1 25	5 3		3.29	46.66	11.38	74.11
SEP	76.	87.	61.	3 15	5 4		3.18	45.16	11.01	71.72
OCT	73.	82.	55.	5 11	5 4		3.29	46.66	11.38	74.11
NOV	70.	78.	54.	8 3	5 3		3.18	45.16	11.01	71.72
DEC	66.	76.	54.	23 18	17 3		3.29	46.66	11.38	74.11
YEAR							38.72	549.39	134.00	872.58

BLDG 630 - MESS HALL DINING AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING		HOURS WHEN		
		INCLUDING		E NOT MET	BT	=
MONTH	HEATING	ECONOMIZER	HEATING C	OOLING	HEATING	COOLING
JAN	452	42	0	0	5242E+06	.0000
		63	Ŏ	Ō	4535E+06	.2028E+06
FEB	337		-	ŏ	4525E+06	.3006E+06
MAR	273	132	0	_		.3472E+06
APR	82	252	0	0	3463E+06	
MAY	8	401	0	0	2142E+06	.3832E+06
JUN	Ō	420	0	0	.0000	.5472E+06
	0	435	ŏ	0	.0000	.6322E+06
JUL	_		_	ŏ	.0000	.6201E+06
AUG	0	434	0	_		.5824E+06
SEP	13	368	0	0	1623E+06	
OCT	75	278	0	0	3246E+06	.3778E+06
NOV	203	156	0	0	4193E+06	.2893E+06
	421	32	Ō	0	5447E+06	.1208E+06
DEC			ŏ	ő	5447E+06	.6322E+06
YEAR	1864	3013	U	U	. 344/11/00	

SYSTEM TOTALS

		ENERG			= :	TOTAL INTERNAL MAXIMU				
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND			
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW			
JAN	126.38	.00	3.29	46.66	3.33	74.11	10.6			
FEB	94.96	.01	2.97	42.14	3.01	66.94	23.1			
MAR	73.31	.47	3.29	46.66	3.33	74.11	26.2			
APR	21.30	1.96	3.18	45.16	3.23	71.72	27.9			
MAY	2.00	3.75	3.29	46.66	3.33	74.11	29.5			
JUN	.00	6.45	3.18	45.16	3.23	71.72	38.0			
JUL	.00	7.36	3.29	46.66	3.33	74.11	42.8			
AUG	.00	7.01	3.29	46.66	3.33	74.11	42.1			
SEP	3.01	4.86	3.18	45.16	3.23	71.72	39.9			
OCT	18.50	1.92	3.29	46.66	3.33	74.11	29.2			
NOV	53.21	.66	3.18	45.16	3.23	71.72	25.9			
DEC	119.36	.04	3.29	46.66	3.33	74.11	20.7			
YEAR	512.04	34.49	38.72	549.39	39.26	872.58	42.8			

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 201015. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-2.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	5242E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.2028E+06	4535E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.3006E+06	4525E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.3472E+06	3463E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.3832E+06	2142E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.5472E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.6322E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.6201E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.5824E+06	1623E+06
OCT	1394.	924.	1.000	57.	ο.	0.	0	0	.3778E+06	3246E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2893E+06	4193E+06
DEC	856.	586.	1.000	35.	0.	Ο.	0	0	.1208E+06	5447E+06

BLDG 630 - MESS HALL DINING AREA - ZONE 2 DDC (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

1.000000

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK*****
FILE NAME MO
STATION 13995
                       YEAR 1955
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
THITTAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.00000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 76646.000000
FLOOR AREA (SQFT) 7190.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 936800.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -836640.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 71900.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 700.000000
INFILTRATION PROFILE
                                        1.00 1.00 1.00 1.00
                                                                                                          1.00
          1.00 1.00
 1.00
                                                                                           1.00
 1.00 1.00 1.00 1.00
                                                                            1.00
                                                                                                           1.00
                                                                            1.00
                                                                                             1.00
                                                                                                           1.00
                                                             1.00
                              1.00
                                             1.00
 1.00
          1.00
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

39779.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 213.00000
                                                             213.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 49.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
```

WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) .0 1471.0 1446.0 1487.0
WINDOW AREA SQFT (AWND) .0 144.0 84.0 128.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) .0 14.4 8.4 12.8
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS	120.0 .245	120.0 .243	120.0 .245	120.0 .243	
WALL TRANSFER FUNCTIONS	.01837	.01822	.01837	.01822	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5	
BN FACTORS BN (BN)	-				
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00280	.00283	.00280	
N=3	.01017	.01008	.01017	.01008	
N=4	.00498	.00494	.00498	.00494	
N=5	.00037	.00036	.00037	******	
N=6	*****	*******	E .	5	
NUMBER OF DN FACTORS (ND)	5	3	3	J	
DN FACTORS N=1	1.00000	1,00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N=6	*****	*****	*****	*****	
**************************************	1 11 11 11 11 11 11				
ROOF U VALUE BTU/HR-SQFT-F (URI ROOF TRANS FUNCTIONS USED (1=YI	F) 5.00	0000E-02			
ROOF TRANS FUNCTIONS USED (1=YI	ES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	2.4233	13E-02			
ROOF B TRANSFER FUNCTIONS (BNR))	E 4 2	E / 2		
.136E-02 .140E-01 .848E-02	.3808-03	543.	543.		
ROOF D TRANSFER FUNCTIONS (DNR) 1.00600 .822E-01	; - 300E-03	999	999.		
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00			
CANTICHE PARTMITH PURCTE DECREES	(AZSK)	9999.000	000		
SKYLIGHT HEIGHT FT (SKH) 0.0	00000E+00)			
SKYLIGHT HEIGHT FT (SKH) 0.00 SKYLIGHT WIDTH FT (SKW) 0.00	0000E+00				
SKYLIGHT OVERHANG WIDTH FT (SKO	O.O (WC	00000E+00			
SKYLIGHT OVERHANG WIDTH FT (SKO OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (S SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SH	1	000000#10	.0		
SKYLIGHT SHADING COEFFICIENT (S	SHSK) U	NDCT\	1	1	
SUMMER START MONTH AND DAY FOR	nck (MMU M 1919 (1919	ו מעמו,	1	1	
SUMMER END MONTH AND DAI FOR SE	+acconding	-00	-	_	
DAYTIME SEV LIGHT II RTU/SOFT-HI	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SOFT-	-HR-F (SKY	UN)	1.292998		
SUMMER END MONTH AND DAT FOR SE SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-HE NIGHT TIME SKYLIGHT U BTU/SQFT- FRACTION OF PROCESS HEAT TO INT	TERNAL SPA	CE (FAP)	8.100000	E-01	
THE THE PROPERTY OF THE PROPER	W T T . W'				50 0
90.0 90.0 90.0	90.0	90.0	78.0	78.0	78.0
		70.0	70 0	78.0	78.0
78.0 78.0 78.0	78.0	78.0	78.0	78.0	70.0
70 0 70 0	90.0	90.0	90.0	90.0	90.0
78.0 78.0 78.0	5 0.0	<i>7</i> 0.0	,,,,	3	
WEEKEND HEATING THERMOSTAT PRO	FILE				
55.0 55.0 55.0	55.0	55.0	68.0	68.0	68.0
55.0	-				
68.0 68.0 68.0	68.0	68.0	68.0	68.0	68.0
			ee 0	FF 0	EE 0
68.0 68.0 68.0	55.0	55.0	55.0	55.0	55.0

			1	r N 7	rre	N.A	L GAINS	AN	D	PRO	OFILES	
			-						_			THERMOSTAT SET
												POINT DEG F
KW	_	-	-	-	-	_	BTU/HR -		-			

PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

PEAK VAL	8.	85858.	56700.	80200.			
HOUR			TION OF PEA				
1	.100	.100	.000	.000	55.0	90.0	כ
2	.100	.100	.000	.000	55.0	90.0	
3	.100	.100	.000	.000	55.0	90.0	
4	.600	.600	.000	.000	55.0	90.0	
5	.800	1.000	.800	.800	55.0	90.0	
6	.800	1.000	1.000	1.000	68.0	78.0	
7	.800	1.000	.800	.800	68.0	78.0	
8	.800	.600	.000	.000	68.0		
9	.800	.200	.000	.000	68.0	78.0	
10	.800	.600	.000	.000	68.0	78.0	
11	.800	1.000	.800	.800	68.0	78.0	
12	.800	1.000	1.000	1.000	68.0	78.0	
13	.800	1.000	.800	.800	68.0	78.0	
14	.800	.600	.000	.000	68.0		
15	.800	.200	.000	.000	68.0	78.0	
16	.800	1.000	.800	.800	68.0	78.0	
17	.800	1.000 1.000 1.000	1.000	1.000	68.0	78.0 78.0	
18	.800	1.000	.800	.800	68.0 68.0	78.0	
19		1.000	.000	.000	55.0		
20	.600	.600 .200	.000 .000	.000	55.0	90.	
21	.100		.000	.000	55.0		
22	.100	.100	.000 .000	.000	55.0		
23	.100	.100	.000	.000			
24	.100	.100	יייייי אינ	ντι 60	000000		•
NO HEATI	NG ABOVE AMI	STENT TEMP	OF (THEK	ντ\ 60	.000000		
NO COOPIL	PE, (IECN)	SIENI IEMP	or (reduce	,,			
SISTEM I	IR CFM (SAC	M) 1400	0,00000				
ECONOMIZE	ER HIGH TEM	T.TMTT F	65.00	0000			
ECONOMIZE	JPPLY AIR S	PART TIME	HR 0.000	000E+00			
SYSTEM M	JPPLY AIR S' IXED AIR TEI	MP(TMXAIR)	60.00	0000			
MIN OUTS	DE AIR FRA	CTION OF S	ACFM (OAFR)	1.0000	00E-01		
man pert	TENOV /FEBI	σ\ 5.50	0000E-01				
FAN TOTAL	L PRESSURE	IN. WATER	(DP)	1.500000			
HEATING I	PLANT RATED	OUTPUT BT	U (HFLOT)	936800.000	000		
HEATING I	PLANT RATED	INPUT BTU	(HFLIN)	1171000.000	000		
HEATING I	PLANT PART	LOAD VS FR	AC OF INPUT	TABLE (PI	Н)		
.100	.191		.286	.300	.369	.400	.451
.500	.537	.600	.625	.700	.718	.800	.812
		1.00	1.00				
.900			0				
COOL TAC	TYPE (ITYPC) PLANT RATED	יי) הוויים דויי פיי		836640.00	0000		
COOLING	PLANT RATED	TNDIM BUIL	(CFLIN)	154670.000			
COOLING 1	PLANT RATED PLANT PART	LOAD FRAC	VS FRAC RA				
.100	.200	.200	.250	.300	.310	.400	.370
.100	. 200	. 200					
.500	.450	.600	.550	.700	.650	.800	.760
		1 00	1.00				
.900	.880	1.00	1.00				

BLDG 630 - MESS HALL DINING AREA - ZONE 2 DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTI JAN	H LOAD .00 -51.34	GAIN LOSS	SOLAR THRU WINDOW 4.73		PARTITODOOF AND SLAB .00	₹	WALL .00	WINDOW .00 -4.25	VENT AND INFL .00 -91.51	LATENT .00 .00
	.18 -38.14		6.30	.00 -7.76	.00 -5.16	.00	.00 -14.78	.00 -3.70	.00 -79.89	.08
MAR	5.55 -25.93	GAIN LOSS	7.96	.06 -7.20	.00 -4.97	.00	.53 -11.85	.00 -3.56	.00 -76.95	1.24
	-6.13	TO22		-4.02	-3.30	.00	0.00		.21 -50.23	
MAY	58.21 31	GAIN LOSS	9.31	.92 -3.66	.06 -2.35	.00	4.75 -3.57	.04 -1.63	.67 -38.02	17.40 .00
									3. -20.	
									8. -17.	
									5. -17.	
SEP	81.85 20	GAIN LOSS		-3.31	-1.90	.00	-3.40	-1.35	2.89 -29.19	.00
OCT	26.19 -3.90	LOSS		-5.27	-3.23	.00	-6.10	-2.20	.30 -48.85	.00
	7.66 -17.47								.00 -62.61	
	-48.97	LOSS		-9.15	-5.82	.00	-19.92	-4.11	.00 -87.80	.00
									20. -618.	
MAX MAX	HEATING COOLING	LOAD=	-49. 56	3744. I 1619. I	BTUH ON BTUH ON	DEC 18 JUL 16	HOUR 6	AMI AMI	BIENT TEN BIENT TEN	MP 0. MP 74.

ZONE UA BTU/HR-F 1702.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-1.I BLDG 630 - MESS HALL DINING AREA - ZONE 2 DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	RNAL S	URE F			COIN-	LIGHTING THOUSAND	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	B10	ВІО	ВІО
JAN	65.	79.	54.	4 29	13 3		3.29	46.66	11.38	74.11
FEB	67.	79.	54.	13 2	17 3		2.97	42.14	10.28	66.94
MAR	69.	80.	54.	24 4	20		3.29	46.66	11.38	74.11
APR	74.	82.	55.	30 1	21		3.18	45.16	11.01	71.72
MAY	78.	83.	59.	31 11	22		3.29	46.66	11.38	74.11
JUN	80.	87.	73.	30 17	5	72. 5 55.	3.18	45.16	11.01	71.72
JUL	81.	91.	74.	16 10	5	74. 3 59.	3.29	46.66	11.38	74.11
AUG	81.	89.	73.	1 25	5	5 74. 3 54.	3.29	46.66	11.38	74.11
SEP	78.	88.	61.	3 15		74. 1 41.	3.18	45.16	11.01	71.72
OCT	74.	82.	55.	5 11	5	67. 1 39.	3.29	46.66	11.38	74.11
NOV	70.	80.	54.	8 3	20		3.18	45.16	11.01	71.72
DEC	65.	79.	54.	23 18	17	7 62. 3 2.	3.29	46.66	11.38	74.11
YEAR							38.72	549.39	134.00	872.58

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-1.I BLDG 630 - MESS HALL DINING AREA - ZONE 2 DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF E LOADS WERE HEATING CO		MAXIMUM BTI HEATING	
JAN	439	21	0	0	4733E+06	.0000
FEB	325	30	0	0	4025E+06	.1752E+06
MAR	256	88	0	0	4015E+06	.2857E+06
APR	71	202	0	0	2955E+06	.3120E+06
MAY	5	375	0	0	1528E+06	.3670E+06
JUN	ō	417	0	0	.0000	.4842E+06
JUL	Ō	435	0	0	.0000	.5616E+06
AUG	Õ	429	0	0	.0000	.5574E+06
SEP	6	354	Ō	0	1001E+06	.5185E+06
OCT	60	224	Õ	0	2732E+06	.3616E+06
NOV	189	114	Ö	0	3683E+06	.2736E+06
	396	18	Ô	Ō	4937E+06	.1034E+06
DEC	1747	2707	Ö	ŏ	4937E+06	.5616E+06
YEAR	1/4/	2/0/	U	Ū		

SYSTEM TOTALS

		ENERGY CONSUMPTION			TOTAL INTERNAL MAXIMUM		
	HEATING	COOLING	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH	MILLION BTU	THOUSAND KWH	KWH	BTU	KWH	BTU	KW
JAN	119.47	.00	3.29	46.66	3.33	74.11	10.6
FEB	88.99	.01	2.97	42.14	3.01	66.94	22.2
MAR	66.89	.42	3.29	46.66	3.33	74.11	25.8
APR	17.80	1.83	3.18	45.16	3.23	71.72	26.6
MAY	1.19	3.56	3.29	46.66	3.33	74.11	28.8
JUN	.00	6.10	3.18	45.16	3.23	71.72	34.5
JUL	.00	6.91	3.29	46.66	3.33	74.11	38.7
AUG	.00	6.64	3.29	46.66	3.33	74.11	38.5
SEP	1.35	4.52	3.18	45.16	3.23	71.72	36.4
OCT	14.31	1.75	3.29	46.66	3.33	74.11	28.5
NOV	48.00	.60	3.18	45.16	3.23	71.72	25.4
DEC	109.98	.04	3.29	46.66	3.33	74.11	20.2
YEAR	467.97	32.40	38.72	549.39	39.26	872.58	38.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 193893. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-1.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYST TEMP. DO DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	4733E+06
FEB	1421.	901.	1.000	37.	0.	Ο.	0	0	.1752E+06	4025E+06
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.2857E+06	4015E+06
APR	2242.	1552.	1.000	55.	0.	Ο.	0	0	.3120E+06	2955E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.3670E+06	1528E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.4842E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.5616E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	٥.	0	0	.5574E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	٥.	0	0	.5185E+06	1001E+06
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.3616E+06	2732E+06
NOV	1008.	710.	1.000	47.	0.	٥.	0	0	.2736E+06	3683E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.1034E+06	4937E+06

BLDG 630 - MESS HALL DINING AREA - ZONE 2 ECONOMIZER (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                  1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
---- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                  YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1)
                                37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                        70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
INITIAL TEMPERATURE OF BUILDING MASS (TO)
                                                      70.000000
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 76646.000000
FLOOR AREA (SQFT) 7190.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 936800.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -836640.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 71900.000000
                                                700.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
INFILTRATION PROFILE
                                                                            1.00
                                   1.00 1.00
                                                          1.00 1.00
                        1.00
            1.00
  1.00
                                   1.00 1.00 1.00
                                                                                1.00
                                                                    1.00
           1.00 1.00
  1.00
                                                                               1.00
                                                                      1.00
                       1.00 1.00 1.00
                                                        1.00
  1.00
           1.00
                                                5.480000E-01
 A FACTOR IN INFILTRATION EQUATION (CINA)
 B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
 C FACTOR IN INFILTRATION EQUATION (CINC)
                                                  8.330000E-03
                                                39779.000000
 BUILDING THERMAL MASS MCP BTU/F (CMCP)
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 213.0000
                                             213.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
                            49.000000
 DOOR UA BTU/HR-F (DUA)
                                    30
 WINDOW GLASS NUMBER (NG)
                                                6.930472E-01
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO)
 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                      .... ...
```

	WALL DAT	A?		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	.0	1471.0	1446.0	1487.0
WINDOW AREA SQFT (AWND)	.0	144.0	84.0	128.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
	.0	14.4	8.4	12.8
WINDOW WIDTH FT (WNDW)	.0	.0	.0	.0
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	•0	••	• •

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .243	120.0 .245	120.0 .243	
WALL TRANSFER FUNCTIONS			01007	01000	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	.01837 5	.01822 5	.01837	5	
BN FACTORS BN (BN)					
N=1	.00003	.00003	.00003	.00003	
N-3	.00283	.00280	.00283	.00280	
N-2	.01017	.01008	.01017	.01008	
N=2	00498	.00494	.00498	.00494	
N=4	00037	.00036	.00037	.00036	
N=5	******	*****	****	*****	
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	E	5	5	5	
NUMBER OF DN FACTORS (ND)	5	J	-	_	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6		1 00000	1 00000	1.00000	
N=1	1.00000	1.00000	1.00000	_1.50000	
N=2	-1.50943	-1.50943	-1.50943	-1.50543	
N=3	.65654	.65654	.65654	.05054	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N-5	*****	*****	*****	*****	
N=6 ROOF AREA SQFT (AROF) 7190	000000				
ROOF AREA SQFT (AROF) /130	7.000000 7.000000	0000E-02			
ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=)	(F) 3.00	(TBOOF)	1		
ROOF TRANS FUNCTIONS USED (1=)	(ES, U=NO)	(IROOF)	-		
ROOF C TRANSFER FUNCTION (CNR)	2.4239	13E-02			
ROOF B TRANSFER FUNCTIONS (BNI	₹)		E 4 3		
136E-02 .140E-01 .848E-02	.380E-03	543.	543.		
mpandeed Bincetone (DNI	7 				
1 00 - 600 .822E-01	300E-03	999.	999.		
ARVITATION OFF DECDERS (TITT)	0.000000)E+00			
CRVITCHT AZIMUTH ANGLE DEGREES	S (AZSK)	9999.000	0000		
DKIDIGHT HBIHOIH IMPER					
EVVITOUR UNICHT RT (SKH) 0.	.000000E+00)			
SKYLIGHT HEIGHT FT (SKH) 0.	.000000E+00)			
SKYLIGHT HEIGHT FT (SKH) 0.0	.000000E+00	,			
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI	COOOOOE+OO	, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT	000000E+00 000000E+00 KOW) 0.0) 000000E+00 0.0000			
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0 SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE (NS)	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH)	000000E+00 0.0000)00E+00		
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0 SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE (NS)	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH)	000000E+00 0.0000)00E+00	,	
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0 SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE (NS)	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH)	000000E+00 0.0000)00E+00	1	-
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) (SHSK) (SHSK)	000000E+00 0.0000 0.00000E+0	000E+00 00 1	1	-
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) (SHSK) (SHSK)	000000E+00 0.0000 0.00000E+0	000E+00 00 1		
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) (SHSK) (SHSK)	000000E+00 0.0000 0.00000E+0	000E+00 00 1		
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT—	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) 1 (SHSK (MND,I 0.000000E- HR-F (SKYU)	000000E+00 0.0000 0.00000E+0 0.000000E+0 0.000000E+0 0.0000000E+0 0.0000000E+0 0.0000000E+0 0.0000000E+0 0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.0000 0.00000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00	000E+00 00 1 1 .292998 1.292998	1	
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT— NIGHT TIME SKYLIGHT U BTU/SQFT— FRACTION OF PROCESS HEAT TO I	.000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) 1 (SHSK (MST SHSK (MND,I 0.000000E- HR-F (SKYU) I-HR-F (SKYU)	000000E+00 0.0000 0.00000E+0 0.000000E+0 0.000000E+0 0.0000000E+0 0.0000000E+0 0.0000000E+0 0.0000000E+0 0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.0000 0.00000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00	000E+00 00 1 1 .292998 1.292998	1	
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT— NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	.000000E+00 .000000E+00 .00000 .000000E .0000000E .000000E .000000E .000000E	000000E+00 0.00000E+0 0.000000E+0 0.NDST) NDND) +00 0 1.	000E+00 00 1 1 .292998 1.292998 8.100000	1 DE-01	
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQFT- FRACTION OF PROCESS HEAT TO IN WEEKEND COOLING THERMOSTAT PRO	.000000E+00 .000000E+00 .00000 .000000E .0000000E .000000E .000000E .000000E	000000E+00 0.00000E+0 0.000000E+0 0.NDST) NDND) +00 0 1.	000E+00 00 1 1 .292998 1.292998 8.100000	1 DE-01	
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT— NIGHT TIME SKYLIGHT U BTU/SQFT— FRACTION OF PROCESS HEAT TO I	.000000E+00 .000000E+00 .00000 .000000E .0000000E .000000E .000000E .000000E	000000E+00 0.00000E+0 0.000000E+0 0.NDST) NDND) +00 0 1.	000E+00 00 1 1 .292998 1.292998 8.100000	1 DE-01 78.0	78.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0	COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUOUE+00 COUDOU	000000E+00 0.00000E+0 0.000000E+0 0.005T) NDST) NDND) +00 1.00 2UN) ACE (FAP)	000E+00 1 1 .292998 1.292998 8.100000	1 DE-01	
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQFT- FRACTION OF PROCESS HEAT TO IN WEEKEND COOLING THERMOSTAT PRO	.000000E+00 .000000E+00 .00000 .000000E .0000000E .000000E .000000E .000000E	000000E+00 0.00000E+0 0.000000E+0 0.NDST) NDND) +00 0 1.	000E+00 00 1 1 .292998 1.292998 8.100000	1 DE-01 78.0	78.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-I NIGHT TIME SKYLIGHT U BTU/SQFT-I FRACTION OF PROCESS HEAT TO II WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0 78.0 78.0 78.0	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) 1 (SHSK (MND,I SHSK (MND,I 0.000000E HR-F (SKYU) I-HR-F (SKYU) T-HR-F (SKYU) OFILE 90.0	000000E+00 0.00000E+0 0.000000E+0 0.005T) NDST) NDND) +00 1.0 YUN) ACE (FAP) 90.0	000E+00 1 1 .292998 1.292998 8.100000 78.0	1 0E-01 78.0 78.0	78.0 78.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0	COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUE+00 COUDOUOUE+00 COUD	000000E+00 0.00000E+0 0.000000E+0 0.005T) NDST) NDND) +00 1.00 2UN) ACE (FAP)	000E+00 1 1 .292998 1.292998 8.100000	1 DE-01 78.0	78.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-I NIGHT TIME SKYLIGHT U BTU/SQFT-I FRACTION OF PROCESS HEAT TO II WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0 78.0 78.0 78.0 78.0 78.0	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) (R SHSK (MND,I 0.000000E- HR-F (SKYU) I-HR-F (SKYU) T-HR-F (SKY	000000E+00 0.00000E+0 0.000000E+0 0.005T) NDST) NDND) +00 1.0 YUN) ACE (FAP) 90.0	000E+00 1 1 .292998 1.292998 8.100000 78.0	1 0E-01 78.0 78.0	78.0 78.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-INIGHT TIME SKYLIGHT U BTU/SQFT-INIGHT U BTU/SQFT-	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) 1 (SHSK (MND,I 0.000000E- HR-F (SKYU) I-HR-F (SKYU) T-HR-F (SKYU) 78.0 90.0 OFILE	000000E+00 0.00000E+0 0.000000E+0 0.000000E+0 0.005T) NDNT) +00 0 1.000000 1.000000000000000000000000	000E+00 1 1 .292998 1.292998 8.100000 78.0 78.0 90.0	1 78.0 78.0 90.0	78.0 78.0 90.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-I NIGHT TIME SKYLIGHT U BTU/SQFT-I FRACTION OF PROCESS HEAT TO II WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0 78.0 78.0 78.0 78.0 78.0	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) (R SHSK (MND,I 0.000000E- HR-F (SKYU) I-HR-F (SKYU) T-HR-F (SKY	000000E+00 0.00000E+0 0.000000E+0 0.005T) NDST) NDND) +00 1.0 YUN) ACE (FAP) 90.0	000E+00 1 1 .292998 1.292998 8.100000 78.0	1 0E-01 78.0 78.0	78.0 78.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SI SUMMER END MONTH AND DAY FOR SI SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT—INIGHT TIME SKYLIGHT U BTU/SQFT—INIGHT U BTU/SQFT—IN	OOOOOOE+OO OOOOOOE+OO OOOOOOE+OO KOW)	000000E+00 0.00000E+0 0.00000E+0 0.000000E+0 0.000000E+0 0.0000000E+0 0.0000000000	000E+00 1 1 .292998 1.292998 8.100000 78.0 78.0 90.0 68.0	1 78.0 78.0 90.0 68.0	78.0 78.0 90.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-INIGHT TIME SKYLIGHT U BTU/SQFT-INIGHT U BTU/SQFT-	000000E+00 000000E+00 KOW) 0.0 I FT (SKOH) (SHSK) 1 (SHSK (MND,I 0.000000E- HR-F (SKYU) I-HR-F (SKYU) T-HR-F (SKYU) 78.0 90.0 OFILE	000000E+00 0.00000E+0 0.000000E+0 0.000000E+0 0.005T) NDNT) +00 0 1.000000 1.000000000000000000000000	000E+00 1 1 .292998 1.292998 8.100000 78.0 78.0 90.0	1 78.0 78.0 90.0	78.0 78.0 90.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT— NIGHT TIME SKYLIGHT U BTU/SQFT— FRACTION OF PROCESS HEAT TO IN WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0 78.0 78.0 78.0 78.0 78.0 78.0 WEEKEND HEATING THERMOSTAT PRO 55.0 55.0 55.0 68.0 68.0 68.0	OOOOOOE+OO OOOOOOE+OO OOOOOOE+OO KOW)	000000E+00 0.00000E+0 0.00000E+0 0.000000E+0 0.000000E+0 0.0000 1.0000 1.0000 90.0 78.0 90.0 55.0 68.0	000E+00 1 1 1 0292998 1.292998 8.100000 78.0 78.0 90.0 68.0 68.0	78.0 78.0 90.0 68.0 68.0	78.0 78.0 90.0 68.0 68.0
SKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SI SUMMER END MONTH AND DAY FOR SI SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT— NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO II WEEKEND COOLING THERMOSTAT PRO 90.0 90.0 90.0 78.0 78.0 78.0 WEEKEND HEATING THERMOSTAT PRO 55.0 55.0 55.0	OOOOOOE+OO OOOOOOE+OO OOOOOOE+OO KOW)	000000E+00 0.00000E+0 0.00000E+0 0.000000E+0 0.000000E+0 0.0000000E+0 0.0000000000	000E+00 1 1 .292998 1.292998 8.100000 78.0 78.0 90.0 68.0	1 78.0 78.0 90.0 68.0	78.0 78.0 90.0

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

PEAK VAL	8.	85858. URLY FRACT	56700.	80200. K			
HOUR		.100	.000	.000	55.0	90.0	
1	.100	.100	.000	.000	55.0	90.0	
2	.100	.100	.000	.000	55.0	90.0	
3	.100	.600	.000	.000	55.0	90.0	
4	.600		.800	.800	55.0	90.0	
5	.800	1.000	1.000	1.000	68.0	78.0	
6	.800	1.000	.800	.800	68.0	78.0	
7	.800	1.000	.000	.000	68.0	78.0	
8	.800	.600	.000	.000	68.0	78.0	
9	.800	.200	.000	.000	68.0	78.0	
10	.800	.600	.800	.800	68.0	78.0	
11	.800	1.000 1.000	1.000	1.000	68.0	78.0	
12	.800	1.000	.800	.800	68.0	78.0	
13	.800	.600	.000	.000	68.0		
14	.800		.000	.000	68.0	78.0	
15	.800	.200	.800	.800	68.0	78.0	
16	.800	1.000	1.000	1.000	68.0	78.0	
17	.800	1.000 1.000	.800	.800	68.0	78.0	
18	.800	1.000	.000	.000	68.0	78.0	
19	.800	.600	.000	.000	55.0	90.0	
20	.600	.200	.000	.000	55.0	90.0	
21	.100 .100	.100	.000	.000	55.0	90.0	
22		.100	.000	.000	55.0		
23 24	.100 .100	100	. 000	.000	55.0	90.0	
SYSTEM T	NG ABOVE AME NG BELOW AME YPE, (IECN) IR CFM (SACE ER HIGH TEME	M) 14000	.000000	OT) (OT) (OT)	60.000000		
SYSTEM S SYSTEM S	UPPLY AIR ST UPPLY AIR ST TXED AIR TEN	TART TIME H TOP TIME HI MP(TMXAIR)	60.0	00000			
MIN OUTS	IDE AIR FRAC	CTION OF SA	ACFM (OAFR	.) 1.00	0000E-01		
FAN EFFI	CIENCY (EFAI		000E-01	1 5000	00		
FAN TOTA	L PRESSURE	IN. WATER	(DP)	1.5000	00		
HEATING	PLANT RATED	OUTPUT BY	(HELOI)	1171000 0	00000		
HEATING	PLANT RATED PLANT PART	TNEOT DIO	CULTINI	TITIOUS.O	PT.H \		
.100	.191	.200	.286	.300	.369	.400	.451
.500	.537	.600	.625	.700	.718	.800	.812
.900 CHILLER	.906 TYPE (ITYPC	1.00 H)	1.00	036640	000000		
COOLING	PLANT RATED PLANT RATED PLANT PART	INPUT BTU	(CFLIN)	836640. 154670.0 TED COP (00000		
.100	.200	.200	.250	.300	.310	.400	.370
.500	.450	.600	.550	.700	.650	.800	.760
.900	.880	1.00	1.00				

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-3.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 ECONOMIZER (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTITI DOOR AND				VENT AND	
JAN	LOAD .00 -51.34	GAIN LOSS	WINDOW 4.73	ROOF	SLAB .00 -5.94	.00	WALL .00 -19.55	.00	.00	• 00
FEB	.00 -38.14		6.30	.00 -7.76	.00 -5.16	.00	.00 -14.78	.00 -3.70	.00 -79.99	.00
MAR	3.04 -25.93	GAIN LOSS	7.96	.06 -7.20	.00 -4.97		.53 -11.85	.00 -3.56	.00 -79.12	.90 .00
APR	20.69 -6.13	LOSS		-4.82	-3.30	.00		-2.38	-57.26	.00
	51.24 31				.06 -2.35					
JUN	109.	GAIN LOSS	9.	2. -3.	0. -1.					
JUL	130.	GAIN LOSS	10.	2. -2.	1. -1.	0. 0.	10. -1.	0. -1.	8. -23.	55. O.
	125. 0.				0. -1.		8. -1.	0. -1.	5. -25.	57. O.
	78.15 20	2000					3.97 -3.40	-1.35	-38.24	.00
OCT	19.31 -3.90	GAIN LOSS	5.80	.18 -5.27	.02 -3.23	.00	.83 -8.10	.02 -2.26	.30 -55.96	8.91 .00
	3.13 -17.47	LOSS		-6.66	-4.16	.00	-12.75	-2.92	-66.06	.00
	.00 -48.97									
TOT	540. -192.	GAIN LOSS	86.	8. -64.	2. -41.	o. o.	37. -105.	1. -29.	20. -681.	241.
XAM XAM	HEATING COOLING	LOAD=	= -4 9 = 68	3744. 39215.	BTUH ON BTUH ON	DEC 18 JUL 6	HOUR 6	5 AMI 7 AMI	BIENT T	EMP 0. EMP 72.

ZONE UA BTU/HR-F 1702.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-3.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 ECONOMIZER (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	RNAL S PERATU	PACE JRE F MIN	DAY I		IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONIA	AvG.	IMA	7174					16.66	11.38	74.11
JAN	65.	79.	54.	4 29	13 3	64. 10.	3.29	46.66	11.50	74.11
FEB	67.	79.	54.	13 2	17 3	64. 15.	2.97	42.14	10.28	66.94
MAR	69.	80.	54.	24 4	20 3	69. 17.	3.29	46.66	11.38	74.11
APR	74.	82.	55.	30 1	21 3	71. 37.	3.18	45.16	11.01	71.72
MAY	78.	83.	59.	31 11	22 4	73. 38.	3.29	46.66	11.38	74.11
JUN	80.	87.	73.	30 17	5 3	72. 55.	3.18	45.16	11.01	71.72
JUL	81.	91.	74.	16 10	5 3	74. 59.	3.29	46.66	11.38	74.11
AUG	81.	89.	73.	1 25	5 3	74. 54.	3.29	46.66	11.38	74.11
SEP	78.	88.	61.	3 15	5 4	74. 41.	3.18	45.16	11.01	71.72
OCT	74.	82.	55.	5 . 11	5 4	67. 39.	3.29	46.66	11.38	74.11
NOV	70.	80.	54.	8	20 3	67. 18.	3.18	45.16	11.01	71.72
DEC	65.	79.	54.	23 . 18	17 3	62. 2.	3.29	46.66	11.38	74.11
YEAR							38.72	549.39	134.00	872.58

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-3.I BLDG 630 - MESS HALL DINING AREA - ZONE 2 ECONOMIZER (FT LEONARD WOOD, MO)

> NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	.,	OURS WHE	MAXIMUM TB	
MONTH	HEATING	ECONOMIZER	HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV	439 325 256 71 5 0 0 0 6 60 189	21 30 88 202 375 417 435 429 354 224	0 0 0 0 0 0 0 0 0	0000000000	4733E+06 4025E+06 4015E+06 2955E+06 1528E+06 .0000 .0000 .0000 1001E+06 2732E+06 3683E+06	.0000 .0000 .2898E+06 .3120E+06 .3670E+06 .6245E+06 .6892E+06 .6616E+06 .5959E+06 .4696E+06
DEC YEAR	396 1747	18 2707	0	0 0	4937E+06 4937E+06	.0000 .6892E+06

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	119.47	.00	3.29	46.66	3.33	74.11	10.6
FEB	88.99	.00	2.97	42.14	3.01	66.94	10.6
MAR	66.89	.23	3.29	46.66	3.33	74.11	25.9
APR	17.80	1.40	3.18	45.16	3.23	71.72	26.6
MAY	1.19	3.01	3.29	46.66	3.33	74.11	28.8
JUN	.00	5.76	3.18	45.16	3.23	71.72	42.4
JUL	.00	6.80	3.29	46.66	3.33	74.11	46.3
AUG	.00	6.60	3.29	46.66	3.33	74.11	44.6
SEP	1.35	4.23	3.18	45.16	3.23	71.72	40.7
OCT	14.31	1.18	3.29	46.66	3.33	74.11	33.8
NOV	48.00	.23	3.18	45.16	3.23	71.72	25.4
DEC	109.98	.00	3.29	46.66	3.33	74.11	10.6
YEAR	467.97	29.44	38.72	549.39	39.26	872.58	46.3

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 192490. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-3.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 ECONOMIZER (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				~						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	ο.	0	0	.0000	4733E+06
FEB	1421.	901.	1.000	37.	0.	ο.	0	0	.0000	4025E+06
MAR	1864.	1216.	1.000	43.	0.	ο.	0	0	.2898E+06	4015E+06
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.3120E+06	2955E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.3670E+06	1528E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.6245E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.6892E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.6616E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.5959E+06	1001E+06
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.4696E+06	2732E+06
NOV	1008.	710.	1.000	47.	0.	ο.	0	0	.2736E+06	3683E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	4937E+06

```
BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (NIGHTIME) (FT LEONARD
            ----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

1.000000

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK*****
 FILE NAME MO
                                        YEAR 1955
 STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 76646.000000
 FLOOR AREA (SQFT) 7190.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 936800.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -836640.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 71900.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 700.000000
 INFILTRATION PROFILE
                                                  .000 .000 .000 .000 .000
                                                                                                                                                                                        1.00
                         .000
    .000
                                                                                                                                   1.00
                                                                                                                                                                                         1.00
   1.00 1.00 1.00 1.00
                                                                                                                                                              1.00
                                                                                                                                   .000
                                                                                                                                                              .000
                                                                                                                                                                                         .000
                                                                                                          .000
   .000 .000 .000
                                                                            .000
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

39779.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP) 39779.0000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 213.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 49.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

WALL DATA

WALL DATA

WALL DATA

WALL DATA

WALL DATA

1 2 3 4

4

4

4

10.0 90.00 180.00 -90.00

1446.0 1487.0

144.0 84.0 128.0

10.0 10.0 10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0

10.0 10.0
```

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.243	.245	.243
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	01027	01022	01937	01822
CN FACTORS	.01837	.01022	.01637	5
NUMBER OF BN FACTORS (NB	5	5	3	3
BN FACTORS BN (BN)	00003	00003	00003	00003
N=1	.00003	.00003	.00003	00280
N=2	.00283	01008	01017	.01008
N=3	.01017	00010.	00498	.00494
N=4	00037	.00434	00037	.00036
N=5	.00037	******	******	*****
BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	E .	5	5	5
NUMBER OF DN FACTORS (ND)	5	J	•	•
DN FACTORS	1 00000	1 00000	1.00000	1.00000
N=1	_1 50000	-1 50943	-1.50943	-1.50943
N=2	-1.50543	65654	65654	.65654
N=3	- 07415	- 07415	07415	07415
N=4	00212	00212	00212	.00212
N=5	.00212	******	*****	*****
N=6 ROOF AREA SQFT (AROF) 7190	000000			
ROOF AREA SOFT (AROF) /190	.000000 EV E OO	00008-02		
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y	F 0-NO	(TROOF)	1	
ROOF TRANS FUNCTIONS USED (1-1) ROOF C TRANSFER FUNCTION (CNR)	2 4230	125-02	-	
ROOF C TRANSFER FUNCTION (CNR)	2.4237 \	135-02		
ROOF B TRANSFER FUNCTIONS (BNR .136E-02 .140E-01 .848E-02) 300x-03	543	543.	
.136E-U2 .14UE-U1 .848E-U2	.360E-03	343.	343.	
ROOF D TRANSFER FUNCTIONS (DNR 1.00600 .822E-01	/ _ 300E_03	000	999.	
SKYLIGHT TILT DEGREES (TILT)	~.300E-03	F+00	,,,,,	
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	(3 7 S K)	9999.000	000	
SKYLIGHT AZIMOTH ANGLE DEGREES SKYLIGHT HEIGHT FT (SKH) 0.	0.00000000000000000000000000000000000	3333.000		
SKYLIGHT HEIGHT FI (SKW) 0.0	0000005100			
SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	00000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
SKYLIGHT GLASS NUMBER (NS)	1	0,000	•••	
/	01101/ N	.000000E+0	0	
SKILIGHT SHADING COEFFICIENT (SHSK (MST	.NDST)	1	1
SUMMER SIRKI MONTH AND DAY FOR S	HSK (MND.N	DND)	1	1
SUMMER END MONTH THE BIT TON DE	0.00000E+	00		
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	R-F (SKYU)	1.	292998	
NIGHT TIME SKYLIGHT U BTU/SOFT	-HR-F (SKY	UN)	1.292998	
EDACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	8.100000	E-01
LUNCTION OF LUNCERD HENT TO IN				

-----THERNAL GAINS AND PROFILES ------THERMOSTAT SET

POINT DEG F KW - - - - - BTU/HR - - - - -PEOPLE PEOPLE HEATING COOLING PROCESS SENSIBLE LIGHTS LATENT 8. 85858. 56700. 80200. --- HOURLY FRACTION OF PEAK ----85858. 56700. 80200. PEAK VAL HOUR .000 .000 75.0 70.0 .100 .100 1 .000 .000 70.0 75.0 .100 .100 2 .000 75.0 .100 .000 70.0 .100 3 .000 70.0 75.0 .000 .600 .600 4 .800 75.0 70.0 .800 5 .800 1.000 75.0 70.0 1.000 1.000 1.000 .800 6 70.0 75.0 .800 1.000 .800 7 .800 .000 70.0 75.0 .800 .600 .000 8 .000 75.0 .200 .000 70.0 .800 9 .000 70.0 75.0 .000 .800 .800 .600 10 70.0 75.0 1.000 11 .800 .800 1.000 70.0 75.0 1.000 1.000 12

NO COOLING SYSTEM TY SUPPLY AI ECONOMIZE SYSTEM SU SYSTEM SU SYSTEM MI MIN OUTSI FAN EFFIC FAN TOTAL HEATING P	.800 .800 .800 .800 .800 .800 .800 .100 .1	.600 .200 1.000 1.000 1.000 .600 .200 .100 .100 .100 .100 .100 .100 .1	.000 .000 .000 .000 OF (THLKO OF (TCLKO .000000 65.00 IR 0.000 & 24. 60.00 ACFM (OAFR) 0000E-01 (DP) J (HFLOT)	.000 .000 .800 1.000 .800 .000 .000 .000	70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0	75 75 75 75 75	.0 .0 .0 .0 .0 .0
.100	.191	.200	.286	.300	.369	.400	.451
.500	.537	.600	.625	.700	.718	.800	.812
CHILLER T COOLING P COOLING P	.906 YPE (ITYPC) LANT RATED LANT RATED LANT PART 1 .200	I) OUTPUT BTU INPUT BTU	O J (CFLOT) (CFLIN)		00000 0000 LC) .310	.400	.370
	.450					.800	
	.880						

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-4.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (NIGHTIME) (FT LEONARD

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOF	₹´			VENT AND	
MATERI	LOAD		MINDOM WINDOW	POOF	ST.AB	RSMT	WALL	WINDO	AND INFL	LATENT
MNTI	1 LOAD	CATN	4 73	.00	.00	.00	.00	.00	.00 -97.83	.00
JAN	-65 71	LOSS	4.75	-10.71	-7.02	.00	-23.98	-5.02	-97.83	.00
FFD	20	CATN	6.30	.00	.00	.00	.00	.00	.00 -85.12	.08
rep	-49 46	LOSS	0.00	-8.92	-6.00	.00	-18.23	-4.31	-85.12	.00
MAD	6.96	GAIN	7.96	.09	.00	.00	.64	.00	.01	1.49
	-36.02			-8.13	-5.62	.00	-14.60	-4.02	-81.00	.00
A DD	32.72	GAIN	8.53	.52	.04	.00	2.84	.03	.51	6.72
	-10.51		0.00	-5.03	-3.40	.00	-7.26	-2.44	-50.37	.00
MAV	67 68	CATN	9.31	1.14	.14	.00	5.97	.10	1.63	18.83
LIMI	-1.51		7.51	-3.25	-1.98	.00	-2.92	-1.37	-35.54	.00
TIINI	136	CATN	9.	2.	0.	0.	9.	0.	5. -13.	55.
UUN	130.	LOSS	,	-2.	-1.	0.	-1.	-1.	-13.	0.
	•									
TIIT.	167.	GAIN	10.	3.	1.	0.	13.	1.	11. -8.	66.
002	0.	LOSS		-1.	-1.	0.	0.	0.	-8.	0.
AUG	159.	GAIN	9.	2.	1.	0.	10.	0.	8.	66.
	0.	LOSS		-1.	-1.	0.	0.	0.	8. -8.	0.
SEP	102.	GAIN	7.	1.	0.	0.	5.	0.	4. -24.	42.
	-2.	LOSS		-3.	-2.	0.	-3.	-1.	-24.	0.
										0.06
OCT	32.13	GAIN	5.80	.25	.05	.00	1.18	.04	.68 -49.05	9.86
	-8.65	LOSS		-5.36	-3.28	.00	-8.51	-2.29	-49.05	.00
NOV	9.65	GAIN	4.41	.02	.00	.00	.15	.00	.01	2.82
	-25.94	LOSS		-7.35	-4.66	.00	-14.80	-3.26	.01 -65.37	.00
DEC	.35	GAIN	4.04	.00	.00	.00	.00	.00	.00	.00
	-62.67	LOSS		-10.66	-6.91	.00	-24.40	-4.89	-93.61	.00
						_	40	_	21	260
				10.	3.	0.	49.	2.	31.	209.
	-262.	LOSS		-67.	-42.	0.	-119.	-30.	-611.	υ.
						DEG 10	110115 2	7 3.41	2722100 0021	MID 3
MAX	HEATING	LOAD=	-34	7498.	BIOH ON	DEC 18	HOUR 2	AMI	BIENT TE	MP 91.
MAX	COOLING	LOAD=	48	6741.	BIUH ON	SEP 2	HOUR 12	AMI	DIENT IE	MF JI.

ZONE UA BTU/HR-F 1702.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-4.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (NIGHTIME) (FT LEONARD

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI MAX		DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH		HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	71.	76.	69.	4 29	13 3		3.29	46.66	11.38	74.11
FEB	71.	76.	69.	9 2	13 3		2.97	42.14	10.28	66.94
MAR	72.	77.	69.	12 4	13 3		3.29	46.66	11.38	74.11
APR	74.	77.	69.	30 1	17 3		3.18	45.16	11.01	71.72
MAY	75.	77.	70.	28 9	13 3		3.29	46.66	11.38	74.11
JUN	76.	77.	72.	27 17	13 3		3.18	45.16	11.01	71.72
JUL	76.	77.	73.	15 10	13 3		3.29	46.66	11.38	74.11
AUG	76.	77.	72.	10 25	13 3		3.29	46.66	11.38	74.11
SEP	75.	77.	70.	3 15	13 3		3.18	45.16	11.01	71.72
OCT	74.	77.	70.	4 28	13 3		3.29	46.66	11.38	74.11
NOV	73.	77.	69.	8 3	13 3		3.18	45.16	11.01	71.72
DEC	71.	76.	69.	23 18	17 3		3.29	46.66	11.38	74.11
YEAR							38.72	549.39	134.00	872.58

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-4.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (NIGHTIME) (FT LEONARD WO

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF H	OURS WHEN	MAXIMUM BTU	
MONTH	HEATING	ECONOMIZER		OOLING	HEATING	COOLING
JAN	573	50	0	0	3080E+06	.0000
FEB	448	69	0	0	2730E+06	.2006E+06
MAR	379	148	0	0	2572E+06	.2911E+06
APR	154	320	Ō	0	1561E+06	.3203E+06
	28	513	Ŏ	0	1086E+06	.3654E+06
MAY	0	629	ŏ	Ö	.0000	.4641E+06
JUN	0	702	ő	ŏ	.0000	.4838E+06
JUL	_		Ö	ŏ	.0000	.4615E+06
AUG	0	699	-	_	9443E+05	.4867E+06
SEP	45	542	0	•		.3787E+06
OCT	148	342	0	•	1434E+06	
NOV	307	180	0	0	2264E+06	.2896E+06
DEC	525	39	0	0	3475E+06	.1192E+06
YEAR	2607	4233	0	0	3475E+06	.4867E+06

SYSTEM TOTALS

MONUM	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
MONTH				46.66	3.33	74.11	10.6
JAN	154.48	.00	3.29	40.00	3.33	74.11	10.0
FEB	118.60	.01	2.97	42.14	3.01	66.94	23.0
MAR	95.82	.52	3.29	46.66	3.33	74.11	25.9
APR	35.91	2.22	3.18	45.16	3.23	71.72	26.9
MAY	6.27	4.22	3.29	46.66	3.33	74.11	28.7
JUN	.00	7.97	3.18	45.16	3.23	71.72	33.5
JUL	.00	9.58	3.29	46.66	3.33	74.11	34.5
AUG	.00	9.27	3.29	46.66	3.33	74.11	33.3
SEP	10.04	6.15	3.18	45.16	3.23	71.72	34.7
OCT	33.52	2.20	3.29	46.66	3.33	74.11	29.3
NOV	75.27	.71	3.18	45.16	3.23	71.72	25.9
DEC	143.02	.04	3.29	46.66	3.33	74.11	20.6
YEAR	672.94	42.88	38.72	549.39	39.26	872.58	34.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 227376. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-4.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (NIGHTIME) (FT LEONARD

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYSTEMP. DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	3080E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.2006E+06	2730E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.2911E+06	2572E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.3203E+06	1561E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.3654E+06	1086E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.4641E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.4838E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.4615E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.4867E+06	9443E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.3787E+06	1434E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2896E+06	2264E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.1192E+06	3475E+06

```
BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (DAYTIME) (FT LEONARD WOO
 ----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                                              1
                                          1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995 YEAR 1955
                                      37.750000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
                                                                      20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 76646.000000
FLOOR AREA (SQFT) 7190.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 936800.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -836640.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 71900.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 700.000000
INFILTRATION PROFILE
                                           1.00 1.00 1.00
                                                                                                 .000
                                                                                    1.00
         1.00
                         1.00
  1.00
                                                                                                 .000
                                                                     .000
                                                                                    .000
         .000 .000
                                         .000 .000
  .000
                                                                     1.00
                                                                                    1.00
                                                                                                 1.00
         1.00 1.00
                                           1.00
                                                       1.00
 1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 5.480000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 39779.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 213.000000

PARTITION UA PTU/HR-F (CUA) 0.00000E+00
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 49.000000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
                                           30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                              WALL DATA
```

U VALUE BTU/(HR-SQFT-F) (UW)	.245	.243	.245	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	01937	01822	. 01837	.01822
CN FACTORS	.01637	5	5	5
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	5	3	J	-
BN FACTORS BN (BN)	00003	00003	.00003	.00003
N=1	.00003	00280	.00283	.00280
N=2	01017	01008	-01017	.01008
N=3	00498	00494	-00498	.00494
N=4	00430	.00036	.00037	.00036
N=5	******	*****	*****	*****
N=6	5	5	5	5
NOWBER OF DN PACTORS (ND)	J	J	•	
DN FACTORS	1.00000	1.00000	1.00000	1.00000
N=1	-1.50943	-1.50943	-1.50943	-1.50943
N=2	65654	.65654	.65654	.65654
N=3	07415	07415	07415	07415
N=4	.00212	.00212	.00212	.00212
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	*****	*****	*****	*****
	. ^^^^			
ROOF AREA SQFT (AROF) /190 ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	νπ\ 5.00	0000E-02		
ROOF U VALUE BID/RE-SQFI F (OF	TES O=NO)	(TROOF)	1	
ROOF TRANS FUNCTIONS USED (1-1	2 4239	13E-02		
ROOF C TRANSFER FUNCTION (CNR)	2.4237	102 02		
ROOF B TRANSFER FUNCTIONS (BNF .136E-02 .140E-01 .848E-02	380E-03	543.	543.	
1.00600 .822E-01	- 300E-03	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00	• • • •	
SKYLIGHT TILL DEGREES (TILL) SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000	
SKILIGHT AZIMOTH ANGLE DEGREES.	000000E+00			
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
SKYLIGHT OVERHANG WIDTH FT (SE	(WO)	00000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
ATTICLE OF ACC NUMBER (NC)	1			
SKILIGHT SHADING COEFFICIENT	SHSK) 0	.00000E+0	0	
SUMMER START MONTH AND DAY FOR	SHSK (MST	, NDST)	1	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK (MND, N	DND)	1	1
	1) (MIRICICIE) M. +	[] []		
DAYTIME SKY LIGHT U BTU/SOFT-H				
Mind a state of the state of th	HR-F (SKYU)	1.	292998	
NICHT TIME SKYLIGHT U BTU/SOFT	HR-F (SKYU)	1.	292998 1.292998	
DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	HR-F (SKYU)	1.	292998 1.292998 8.100000	E-01

		inter	NAL GAINS	AND PROFILES	THERMOS	
PEAK VAL	KW - LIGHTS 8.	85858.	- BTU/HR - PEOPLE SENSIBLE 56700.	PEOPLE LATENT 80200.	HEATING	COOLING
HOUR		OURLY FRAC			70.0	75.0
1	.100	.100	.000	.000		75.0
2	.100	.100	.000	.000	70.0	
3	.100	.100	.000	.000	70.0	75.0
4	.600	.600	.000	.000	70.0	75.0
5	.800	1.000	.800	.800	70.0	75.0
6	.800	1.000	1.000	1.000	70.0	75.0
7	.800	1.000	.800	.800	70.0	75.0
8	.800	.600	.000	.000	70.0	75.0
9	.800	.200	.000	.000	70.0	75.0
	.800	.600	.000	.000	70.0	75.0
10	.800	1.000	.800	.800	70.0	75.0
11		1.000	1.000	1.000	70.0	75.0
12 13	.800 .800	1.000	.800	.800	70.0	75.0

* 4	000	.600	000	.000	70.0	75	.0				
14	.800	300	000	.000	70.0	75	.0				
15	.000	1 000	800	. 800	70.0	75 75	.0				
16	.800 .800 .800 .800 .800 .600 .100	1.000	1 000	1.000	70.0	75 75	.0				
17	.800	1.000	800	800	70.0	75	.0				
18	.800	1.000	000	000	70.0	75	.0				
19	.800	1.000	.000	000	70.0	75	.0				
20	.600	. 600	.000	.000	70.0	75					
21	.100	.200	.000	.000	70.0	75 75					
22	.100	.100	.000	.000	70.0	75					
23	. 100	. 100				75 75	.0				
24	.100	.100	.000	.000	70.0	/5	.0				
NO HEATI	NG ABOVE AN	BIENT TEMP	. OF (THLK	OT) 6	0.000000						
NO COOPT	NG BELOW AN	IDIENI IEMP	. Or (ICLA	OT) 6	0.00000						
SYSTEM T	YPE. (IECN)	i	2								
CIIDDI.V &	TR CFM (SAC	'FM) 1400	0.000000								
ECONOMIZ	ER HIGH TEN	IP LIMIT F	65.0	00000							
SYSTEM S	SUPPLY AIR S	START TIME	HR 0.00	0000E+00							
ECONOMIZER HIGH TEMP LIMIT F 65.000000 SYSTEM SUPPLY AIR START TIME HR 0.000000E+00 SYSTEM SUPPLY AIR STOP TIME HR 24.000000											
SYSTEM MIXED AIR TEMP(TMXAIR) 60.00000											
MIN OUTSIDE AIR FRACTION OF SACEM (OAFR) 1.000000E-01											
TAN TEFT	CIENCY (REZ	NN 5.50	0000E-01								
FAN TOTA	L PRESSURE	IN. WATER	(DP)	1.50000	0						
HEATING	PLANT RATE	OUTPUT BT	U (HFLOT)	936800.00	0000						
HEATING	PLANT RATE	INPUT BTU	(HFLIN)	1171000.00	0000						
HEATING	PLANT PART	LOAD VS FR	AC OF INPU	T TABLE (P	'LH)						
.100	.191	.200	.286	.300	.369	.400	.451				
500	. 537	.600	.625	.700	.718	.800	.812				
.500											
900	.906	1.00	1.00								
CHILLER	TYPE (ITYPO	:H)	0								
COOLING	PLANT RATE	OUTPUT BT	U (CFLOT)	836640.0	00000						
COOLING	PLANT DADT	TOAD FRAC	VS FRAC RA	TED COP (P	LC)		,				
TOOLING	SUU ETIVILI EVILI	200	- 250	.300	.310	.400	.370				
.100	. 200	.200	. 250								
	.450					.800	.760				
.500	.450	. 600	. 550	.,00	, , , ,						
000	000	1 00	1.00								
.900	.880	1.00	1.00								

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-5.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (DAYTIME) (FT LEONARD WOO

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT				VENT AND	
			THRU		AND	D CVM	MATT	WINDOW		LATENT
MNT	LOAD		WINDOW	ROOF	SLAB	RSWI	WALL	MIMDO	O.	0.
	0.		5.	11	0. -7.	0.	-24	-5.	-105.	Ö.
	-72.									
	.20 -55.29	CATN	6 30	00	00	- 00	- 00	.00	.00	.07
FEB	.20	GAIN	6.30	_8 92	-6.01	.00	-18.23	-4.31	-90.94	.00
	-55.29									
MAD	6.99	CAIN	7.96	.09	.00 -5.61	.00	.64	.00	.01	1.47
	-41.68	TOSS	7.50	-8.12	-5.61	.00	-14.58	-4.02	-86.65	.00
	-41.00									
a DD	32.46	CATN	8.53	. 52	.04 -3.38	.00	2.86	.03	.45	6.57
	-13.99	LOSS	0.00	-5.01	-3.38	.00	-7.20	-2.42	-54.04	.00
MAV	66.54	GAIN	9.31	1.14	.14	.00	6.01	.10	1.41	18.05
	-2.38			-3.19	-1.94	.00	-2.79	-1.34	-36.82	.00
JUN	133.	GAIN	9.	2.	0.	0.	9.	0.	4.	53.
	133. 0.	LOSS		-2.	-1.	0.	-1.	-1.	-14.	0.
JUL	167. O.	GAIN	10.	3.	1.	0.	13.	7.	10.	05.
	ο.	LOSS		-1.	0.	0.	0.	0.	-9.	٠.
	4.50	~ > T > T	0	2	1	0	10.	0.	7.	68.
AUG	160. 0.	GAIN	9.	_1	_1	0.	0.	0.	-9.	0.
CFD	101. -3.	GATN	7.	1.	0.	0.	5.	0.	4.	42.
SEF	-3.	LOSS		-3.	-2.	0.	-3.	-1.	-26.	0.
ОСТ	31.45 -11.91	GAIN	5.80	.25	.05	.00	1.19	.04	.55	9.43
001	-11.91	LOSS		-5.33	-3.25	.00	-8.40	-2.27	-52.64	.00
NOV	9.67	GAIN	4.41	.02	.00	.00	.15	.00	.01	2.76
	-30.89	LOSS		-7.34	.00 -4.65	.00	-14.77	-3.26	-70.29	.00
DEC	0.	GAIN	4.	0.	0.	0.	0.	ō.	101	Ů.
	0. -70.	LOSS		-11.	-7.	0.	-24.	-5.	-101.	0.
TOT	709.		86.	10.	-42.	0.	49. -110	-30	-654	2,0.
	-301.	LOSS		-67.	-42.	0.	-113.	-30.	-034.	•
M2 W	HEATING COOLING	T O 3 D =	_40	2674	RTIIH ON 1	DEC 18	HOUR 2	AMI	BIENT TE	MP 3.
MAX	MEATING	TOWD=	- 	1701. 1	BTUH ON	JUL 28	HOUR 17	AMI	SIENT TE	MP 92.
MAX	COOPING	TOWD-	J.E.	_,						

ZONE UA BTU/HR-F 1702.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-5.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (DAYTIME)(FT LEONARD WOO

									FAN	TOTAL
INTERNA	INTE	PERAT	SPACE URE F MIN	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	71.	76.	69.	4 29	13	64. 3 10.	3.29	46.66	11.38	74.11
FEB	71.	76.	69.	9 2	1:	3 57. 3 15.	2.97	42.14	10.28	66.94
MAR	72.	77.	69.	12 4	1:	3 74. 3 17.	3.29	46.66	11.38	74.11
APR	74.	77.	69.	30 9	1	7 83. 3 32.	3.18	45.16	11.01	71.72
MAY	75.	77.	70.	29 11	18	84. 3 38.	3.29	46.66	11.38	74.11
JUN	76.	77.	71.	27 17	1	88. 3 55.	3.18	45.16	11.01	71.72
JUL	76.	77.	72.	15 10	1	3 93. 3 59.	3.29	46.66	11.38	74.11
AUG	76.	77.	71.	10 25	1	3 85. 3 54.	3.29	46.66	11.38	74.11
SEP	75.	77.	70.	3 15	1	3 89. 3 41.	3.18	45.16	11.01	71.72
OCT	74.	77.	70.	4 28	1	3 83. 3 32.	3.29	46.66	11.38	74.11
NOV	72.	77.	69.	8 3	1	3 77. 3 18.	3.18	45.16	11.01	71.72
DEC	71.	76.	69.	29 18		3 63. 3 2.	3.29	46.66	11.38	74.11
YEAR							38.72	549.39	134.00	872.58

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-5.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (DAYTIME) (FT LEONARD WOO

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF I	HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING CO	OOLING	HEATING	COOLING
JAN	570	51	0	_	3596E+06	.0000
FEB	451	74	0	-	3171E+06	.2013E+06
MAR	401	158	0	•	2851E+06	.2992E+06
APR	179	312	0	•	1857E+06	.3279E+06
MAY	38	498	0	0	1332E+06	.3837E+06
JUN	0	597	0	0	.0000	.4758E+06
JUL	Ō	688	0	0	.0000	.5217E+06
AUG	Ō	688	0	0	.0000	.4745E+06
SEP	58	518	0	0	1167E+06	.4714E+06
OCT	181	341	0	0	1729E+06	.3597E+06
NOV	330	189	0	0	2679E+06	.2822E+06
DEC	529	41	Ō	0	4027E+06	.1373E+06
YEAR	2737	4155	Ö	0	4027E+06	.5217E+06

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	160.20	.00	3.29	46.66	3.33	74.11	10.6
FEB	124.91	.01	2.97	42.14	3.01	66.94	23.0
MAR	105.05	.51	3.29	46.66	3.33	74.11	26.2
APR	43.30	2.18	3.18	45.16	3.23	71.72	27.1
MAY	8.68	4.16	3.29	46.66	3.33	74.11	29.5
JUN	.00	7.68	3.18	45.16	3.23	71.72	34.1
JUL	.00	9.50	3.29	46.66	3.33	74.11	36.6
AUG	.00	9.21	3.29	46.66	3.33	74.11	34.0
SEP	13.00	6.03	3.18	45.16	3.23	71.72	33.9
OCT	41.95	2.13	3.29	46.66	3.33	74.11	28.4
NOV	83.99	.71	3.18	45.16	3.23	71.72	25.7
DEC	150.25	.04	3.29	46.66	3.33	74.11	21.1
YEAR	731.34	42.16	38.72	549.39	39.26	872.58	36.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 235155. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 630B-5.I

BLDG 630 - MESS HALL DINING AREA - ZONE 2 OUTSIDE AIR (DAYTIME) (FT LEONARD WOO

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYS' TEMP. DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	3596E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.2013E+06	3171E+06
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.2992E+06	2851E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.3279E+06	1857E+06
MAY	2489.	1771.	1.000	65.	0.	٥.	0	0	.3837E+06	1332E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.4758E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.5217E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.4745E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.4714E+06	1167E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.3597E+06	1729E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2822E+06	2679E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.1373E+06	4027E+06

COMPUTER SIMULATIONS

BUILDING 637

EMC ENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

04-Mar-93

DATE: BUILDING NO .:

637Z1

BLDG. TYPE: CHURCH (CHAPEL AREA)

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1129.8	620.3	615.6	615.6	1065.6	1099.4
COOLING (kWH)	32780	13650	13320	12610	31380	31240

SUPPLY AIR FAN	6970 CFM
FLOOR AREA	4647 FT ²
CFMI	604 CFM
UA	3143 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON 	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS	
M-F	1900	2000	5 HR	HR. ON HEATING	286 HR/YR	
SAT.	1100	1200	1 HR	HR. ON COOLING	192 HR/YR	
SUN.	700	1200	5 HR	HR. OFF HEATING	4082 HR/YR	
0011.		TOTAL OCCUPY HR.		HR. OFF COOLING	2736 HR/YR	
	TOTAL UNOC		157 HR/WK			
		ANNUAL OCCUPY HR.				
	ANNUAL UNO	CC. HR.	8186 HR/YR			

8760 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY 4368 HR/YR 2928 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

4082 HR/YR 286 HOUR SAVE (HEATING ONLY) 4368 2736 HR/YR HOUR SAVE (COOLING ONLY) 2928 192

HOAUHC	1129.8 MBtu -	1065.6 MBtu	=	1.30E+01 Btu/CFM-HR
,,0,,0,,,	604 CFM *	8186 HR/YR	Ī	
HOAUH	1129.8 MBtu -	1065.6 MBtu	=	2.60E+01 Btu/CFM-HR
ļ	604 CFM *	4082 HR/YR		
COAUHC	32780 kWH -	31380 kWH	=	2.83E-04 kWH/CFM-HR
Ī	604 CFM *	8186 HR/YR		
COAUC	32780 kWH -	31380 kWH] =	8.47E-04 kWH/CFM-HR
	604 CFM *	2736 HR/YR		
HOAOHC	1129.8 MBtu -	1099.4 MBtu	=	8.78E+01 Btu/CFM-HR
	604 CFM *	574 HR/YR		
НОАОН	1129.8 MBtu -	1099.4 MBtu	_ =	1.76E+02 Btu/CFM-HR
	604 CFM *	286 HR/YR		
COAOHC	32780 kWH	31240 kWH] =	4.45E-03 kWH/CFM-HR
	604 CFM *	574 HR/YR		
COAOC	32780 kWH	31240 kWH	=	1.33E-02 kWH/CFM-HR
3 - 7 - 7	604 CFM *	192 HR/YR	1	
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

AJN

CHECKED BY:

04-Mar-93

DATE: BUILDING NO .:

637Z1

BLDG. TYPE: CHURCH (CHAPEL AREA)

ENERGY CONSTANT CALCULATIONS

ECC	13320 kWH -	12610 kWH	_ =	5.31E-04 kWH/CFM-HR	
	6970 CFM *	192 HR/YR			
ECHC	13320 kWH -	12610 kWH	_ =	1.78E-04 kWH/CFM-HR	-
	6970 CFM *	574 HR/YR			
NSUCHO	32780 kWH -	13650 kWH	_ =	3.35E-04 kWH/CFM-HR	
İ	6970 CFM *	8186 HR/YR			
NSUCC	32780 kWH -	13650 kWH	_ =	1.00E-03 kWH/CFM-HR	
1	6970 CFM *	2736 HR/YR			
DDCCHC	13650 kWH -	13320 kWH	=	8.25E-05 kWH/CFM-HR	
	6970 CFM *	574 HR/YR			
DDCCC	13650 kWH -	13320 kWH	=	2.47E-04 kWH/CFM-HR	
	6970 CFM *	192 HR/YR			
NSC	1129.8 MBtu -	620.25 MBtu	_ =	1.62E+05 Btu/UA	
	3143	UA			
DSC	620.25 MBtu -	615.64 MBtu	=	1.47E+03 Btu/UA	
	3143	UA			
OPT	(2 HR/DAY X 272 DAY	/YR) - 294	HR/YR		
	•	•	=	250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
	•		=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	

E M C ENGINEERS, INC. DATE: 10-Mar-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 3204.000 CHK: **CLIENT PROJ. ENG.: DOUG CAGE** AJN LOCATION: FT LEONARD WOOD FILE: 637Z1BHL BUILDING HEATING LOAD CALCULATION SHEET BLDG NAME: CHAPEL - ZONE 1 BLDG NO: BLDG FUNCTION: CHAPEL AREA # FLOORS 1 FLOOR AREA: (SQ. FT) 4.647 300 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL NORTH SOUTH **EAST** 1,458 1,458 7,107 (SQ. FT) 1,822 2,369 WALLS, GROSS 486 94 0 833 (SQ. FT) 253 **GLASS** 0 82 PERSONNEL DOOR (SQ. FT) 21 21 41 0 0 0 0 0 OVERHEAD DOOR (SQ. FT) 1,548 1,862 1,323 1,458 6,192 WALLS, NET (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 5,313 PERSONNEL DOOR (SQ. FT) 82 OVERHEAD DOOR (SQ. FT) 0 0 0 0 **BASEMENT WALLS** (SQ. FT) 0 II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) COMPONENTS R-VALUE WALLS: (SKETCH CROSS SECTION OF WALL) **OUTSIDE AIR FILM** 0.17 0.43 2. 4" FACE BRICK AIR SPACE 0.91 3. 4"FACE BRICK 3.03 4. 12" CMU AIR SPACE 5. 12" CMU 6. INSIDE AIR FILM 0.68 7 TOTAL R-WALL = 5.22 U = 1/R0.191 COMPONENTS R-VALUE ROOF: (SKETCH CROSS SECTION OF ROOF) **OUTSIDE AIR FILM** 0.17 ASPHALT SHINGLE 0.20 ASPHALT SHINGLE 2. FELT MEMBRANE 3. .375" FELT MEMBRANE 0.29 PLYWOOD SHEATHING 0.47 PLYWOOD SHEATHING 4. . I" INSULATION 3.33 1" INSULATION 5 4" WOOD 4" WOOD 4.76 6 0.68 INSIDE AIR FILM 9.90 TOTAL R-ROOF = U=1/R0.101 1.61 R-GLASS PPG 'PENNVERNON' C.L. TWNDV, SSA, 88 S.C. **GLASS TYPE:** 0.67 SIF SLAB TYPE FLOOR: CEMENT 0.00 R-BASEM. BASEMENT TYPE: NONE R-ODOOR 0.00 **OVERHEAD DOOR TYPE:** NONE 1.06 2' RED OAK WITH 80% SINGLE GLASS R-PDOOR PERSONNEL DOOR TYPE: III. INFILTRATION: 590 0.083 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 7107 = X CFM / SQ.FT. 0.000 0 AVG. WALL H/M/L (SQ.FT.) 0 X CFM / SQ.FT. 0.000 LEAKY WALL H/M/L (SQ.FT.) 0 DOOR OPENINGS / HR - SINGLE DOOR 1.600 X CFM /OPENING /HR 14 X CFM /OPENING /HR 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 604 TOTAL INFILTRATION (CFM) **UA ODOOR** 0.000 0 = ODOOR AREA X DOOR 'U' 0 78 X DOOR 'U' 0.943 **UA PDOOR** = PDOOR AREA 82 1,185 **UA WALL** = WALL AREA 6,192 X WALL 'U' 0.191 _ X ROOF 'U' 537 = ROOF AREA 5,313 0.101 = **UA ROOF** 517 0.621 833 X GLASS 'U' = **UA GLASS** = GLASS AREA X SLF 0.670 201 **UA SLAB** = SLAB PERIM. 300 == X BASE. 'U' 0 0.000 **UA BASEM** ≃B-WALL AREA 0 625 X A. T. F. 1.035 604 INFILTRATION = CFM TOTAL UA (BTU/HR°F) 3,143

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 05-Feb-93 EMC NO.: DATE:

PREPARED BY: CHECKED BY: EII E:

BHS

CEL 63771

	ZONE:	
17/50	637	
.: ::	BLDG:	

				-	O'NI O	- total	
7000	No	Activity		- Apreal	Sensine	Lawin	•
2 2	5		Degree of Activity	Application	(BTU/H)	(BTU/H)	٦
S	People	IVDE			300	105	ĺ
V	٤	-	1 Control of roct	I heater, Movie	677	2	ļ
	3		Coarco at 1001				
i							1
_							
_							Ţ
						_ I ∀ LOT	
TOTAL	ξ					10.5	1
2	3						

10,500

22,500

TOT. Lat (BTU/H) 10,500

TOT Sen. (BTU/H) 22,500

Latent (BTU/H)

Sensible

Rates of Heat Gain from Occupants of Conditioned Spaces

	Total Wattage	7,500	800	006	420				9,620
	Watts/Fixture	750	200	150	09				TOTAL
Peak Wattage Value for Lights	Description	Incomplement - 750m	Incardocopt - 200m	Incaridacent - 2000	40 Incondescent - 60w	ilicalidescelli oom			
	Fixture	2		č	2 0	2			
		LIXIGIES	2 3	4 0	0 1				27
	Zone	ė,			1_		 		TOTAL

			Peak Value for Internal Gains				
					Heat Gain		Total
20ne	Zone No. of Equip.	Eduip.	Deeription	Average Wattage	to Space (%)	Total Wattage	(BTU)
2	Eduipmen	8		1 150	15%	1,150	3,925
_			Church Organ	2011			
							2005
				TOTAL	15%	001.1	
	_						

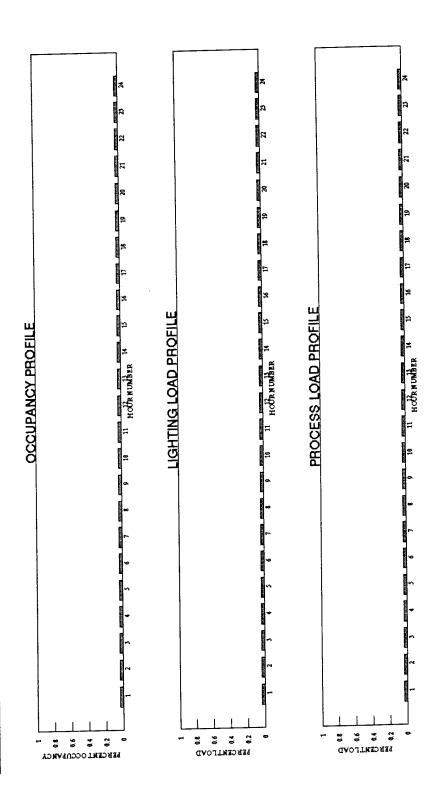
E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

05-Feb-93	BHS	CEL	637Z1	637	-
DATE:	PREPARED BY:	CHECKED BY:	FIE:	BLDG:	ZONE:

3204-000

EMC NO.:

20.19	SI IS	TYPE OF										∦ ਉ	N E	HOUR NUMBER	Æ									
1	EI INCTION	PBOEILE	F	6	3	4	rc.	9	7	8	9 10	0 11	12	13	14	15	16	17 18	48	19	8	21 22		
<u> </u>		1	-	1	1	1			ł									100	000	0	5	0	0	0
0	40000	VON DANCY	0	000	c	C	_		000	0 0 0	0.0 0.0	00	00	0.0	0	0.0	0.0	0.0	0.0	2	기 인	ز د	3	┪
0	555		2	2	;	2	?	2		1					9	9	9	0	0	00 00	-	0	0	
		CNILIC	C	C	c		0	00	000	0.0	0.0	0.0	0.0	0.0	0.0	2	э Э	2	2.0	ייי	5	اد اد	5	_
			,	2	2	;	4	7					٠	ľ		•	0	3	0	0	0	0	0	-
		DECCE	00	C	c			000	000	0.0	0.0	00	000	0.0	0.0	0.0		-1		3	2	; ;	2	<u>خ</u>
		3	2	,	5	,				7	۱						1							



```
BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)
```

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.900000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                       YEAR 1955
STATION 13995 IEAK 1995
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
STATION 13995
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.00000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.00000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 127093.000000
FLOOR AREA (SQFT) 4647.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 475000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -360000.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 46470.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
                                                              604.000000
INFILTRATION PROFILE
                                              1.00 1.00 1.00 1.00 1.00
                              1.00
                1.00
  1.00
          1.00 1.00 1.00 1.00 1.00
                                                                                                           1.00
  1.00
  1.00 1.00 1.00 1.00 1.00 1.00 1.00
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 4250.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 201.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 78.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
                                                    1.000000
WINDOW SHADING FACTOR (SHD)
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1862.0 1458.0 1548.0 1323.0
WINDOW AREA SQFT (AWND) 486.0 .0 253.0 94.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 48.6 .0 25.3 9.4
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .191	120.0 .191	120.0 .191	120.0 .191
WALL TRANSFER FUNCTIONS	• = - =			
WALL TRANSFER FUNCTIONS	00155	.00155	.00155	.00155
CN FACTORS	.00133	6	6	6
NUMBER OF BN FACTORS (NB	O	Ū	•	
BN FACTORS BN (BN)	00000	00000	00000	.00000
N=1	.00000	00000	00000	.00000
N=2	.00000	.00000	00015	.00015
N=3	.00015	.00015	.00013	00064
N=4	.00064	.00064	00060	00060
N=5	.00060	.00000	.00000	00015
N=6	.00015	.00012	.00013	.00013
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	6	6	6	U
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6			4 00000	1 00000
N=1	1.00000	1.00000	1.00000	1.00000
N=2	-2.48050	-2.48050	-2.48050	-2.48050
N=3	2.22216	2.22216	2.22216	2.22210
N=4	87313	87313	87313	8/313
N=5	.14299	.14299	.14299	.14299
N-2	00853	00853	00853	00853
N=6 ROOF AREA SQFT (AROF) 5313	.000000			
ROOF AREA SQFT (AROF) 5313 ROOF U VALUE BTU/HR-SQFT-F (URITOR) ROOF TRANS FUNCTIONS USED (1=Y) ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR	r) 1.01	0000E-01		
ROOF U VALUE BIU/RR-SQFI F (ON	ES D=NO)	(TROOF)	1	
ROOF TRANS FUNCTIONS USED (1-1)	2 2867	93E-03		
ROOF C TRANSFER FUNCTION (CNR)	2.2007	755 05		
ROOF B TRANSFER FUNCTIONS (BAR) 1145-02	572E-03	.953E-04	
ROOF B TRANSFER FUNCTIONS (BNR .000 .000 .476E-03	.1145-02	.5725 05		
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.98 1.34)	434F-01	- 170E-02	
1.00 -1.98 1.34	3/ 4	.4345 01	. 1, 02 02	
SKYLIGHT TILT DEGREES (TILT)	(37CY)	0000 NN	2000	
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	$(\mathbf{w}_{\mathbf{p}})$) 1		
SKYLIGHT HEIGHT FT (SKH) 0.	0000005+00	,		
SKYLIGHT HEIGHT FI (SKM) 0.0	00000000	00000E+00		
SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	0.000	^^¤+^^	
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOR)	0.000	J00B.00	
SKYLIGHT GLASS NUMBER (NS)		000000	^	
SKYLIGHT SHADING COEFFICIENT (SHSK)	7.000000ET	1	1
SUMMER START MONTH AND DAY FOR	SHSK (MST	(TAUSI)	1	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	HSK (MND,N	(שאשו	_	•
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	0.000000E+	-00	202000	
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)) I	. Z7Z770	
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	(UN)	1.232330	·Ε_01
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	ACE (FAP)	1.500000	E-01

-----THERNAL GAINS AND PROFILES ------THERMOSTAT SET

					TUENTIOS	
					POINT D	EG F
	KW -		BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	ENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	10.	589.	22500.	10500.		
HOUR	HC	URLY FRACT	ION OF PEA	7K		
1	.040	.040	.040	.040	70.0	75.0
_	.040	.040	.040	.040	70.0	75.0
2	.040	.040	.040	.040	70.0	75.0
3		.040	.040	.040	70.0	75.0
4	.040		.040	.040	70.0	75.0
5	.040	.040			70.0	75.0
6	.040	.040	.040	.040		75.0
7	.040	.040	.040	.040	70.0	
8	.040	.040	.040	.040	70.0	75.0
9	.040	.040	.040	.040	70.0	75.0
	.040	.040	.040	.040	70.0	75.0
10		.040	.040	.040	70.0	75.0
11	.040		.040	.040	70.0	75.0
12	.040	.040	.040	.040	, 3 . 0	

13	.040	.040	.040	.040		75.		
14	.040	.040	.040	.040	70.0	75.		
15	.040	.040	.040	.040	70.0	75.		
16	.040	.040	.040	.040	70.0	75.		
17	.040	.040	.040	.040	70.0	75.		
18	.040	.040	.040	.040	70.0	75.		
19	.040	.040	.040	.040	70.0	75.		
20	.040	.040	.040	.040	70.0			
21	.040	.040	040	.040	70.0			
22	.040	.040	.040	.040	70.0	75. 75.		
23	.040	.040		.040	70.0			
0.4	.040	.040	.040	.040	70.0	/5.	. 0	
NO HEATIN	IG ABOVE AMB	IENT TEMP.	OF (THLKO	OT) 68	3.000000			
NO COOLIN	IG BELOW AMB	IENT TEMP.	OF (ICTVC	OT) 65	.000000			
CVCTEM TY	TPR. (IKCN)							
CUDDIV AT	TO CEM /SACE	M 1 6970	0.000000					
ECONOMIZE	ER HIGH TEMP	LIMIT F	65.00	00000				
SYSTEM SU	ER HIGH TEMP JPPLY AIR ST	ART TIME H	IR 0.000)000E+00				
CVCTTM CI	IDDIV ATR ST	OP TIME HE	{ 24.	.000000				
CVCTEM MI	אשיר פוג חשצו	P(TMXAIR)	55.00	00000	000 01			
LATE ATTMAT								
		TION OF SA	ACFM (OAFR	1.0000				
		TION OF SA	ACFM (OAFR	1.0000				
		TION OF SA	ACFM (OAFR	1.0000				
FAN EFFIC	CIENCY (EFAN DESSURE I	TION OF SA 5.500 N. WATER OUTPUT BTU	CFM (OAFR) 0000E-01 (DP) J (HFLOT)	1.00000 1.000000 475000.000	0 0000			
FAN EFFICE FAN TOTAL HEATING IN THE STING IN	CIENCY (EFAN L PRESSURE I PLANT RATED	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN)	1.00000 475000.000 593750.000	0 0000 0000			
FAN EFFICE FAN TOTAL HEATING HEATING HEATING HEATING	CIENCY (EFAN L PRESSURE I PLANT RATED PLANT RATED PLANT PART L	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU OAD VS FRA	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU	1.00000 475000.000 593750.000	0000 0000 0000	400	. 451	
FAN EFFICE FAN TOTAL HEATING IN THE STING IN	CIENCY (EFAN L PRESSURE I PLANT RATED PLANT RATED PLANT PART L	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU	1.00000 475000.000 593750.000	0 0000 0000	.400	.451	
FAN EFFICE FAN TOTAL HEATING IN HEATING IN HEATING IN HEATING IN 100	CIENCY (EFAN DESSURE I PLANT RATED PLANT RATED PLANT PART L .191	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU OAD VS FRA .200	CCFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286	1.00000 475000.000 593750.000 T TABLE (PI	0 0000 0000 LH) .369			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN HEATING IN HEATING IN 100	CIENCY (EFAN L PRESSURE I PLANT RATED PLANT RATED PLANT PART L	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU OAD VS FRA .200	CCFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286	1.00000 475000.000 593750.000	0000 0000 0000			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN HEATING IN 1000 .500	CIENCY (EFAN PRESSURE I PLANT RATED PLANT RATED PLANT PART L .191	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU OAD VS FRA .200 .600	CFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286	1.00000 475000.000 593750.000 T TABLE (PI	0 0000 0000 LH) .369			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 100 100 100 100 1000 1000 1000 1	CIENCY (EFAN PRESSURE I PLANT RATED PLANT RATED PLANT PART L .191 .537	TION OF SA 5.500 N. WATER OUTPUT BTU INPUT BTU OAD VS FRA .200 .600	CFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286 .625	1.00000 475000.000 593750.000 T TABLE (PI	0 0000 0000 LH) .369			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .500 .900 .500	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART L .191 .537	TION OF SA) 5.500 N. WATER OUTPUT BTU INPUT BTU .OAD VS FRA .200 .600	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286 .625	1.00000 475000.000 593750.000 F TABLE (PI .300	0 0000 0000 LH) .369			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .500 .900 CHILLER IN COOLING IN COOLING IN TOTAL PROPERTY IN THE PROPERTY IN TOTAL PRO	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART L .191 .537 .906 IYPE (ITYPCH	TION OF SA) 5.500 N. WATER OUTPUT BTU INPUT BTU .OAD VS FRA .200 .600 1.00	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286 .625 1.00 4 J (CFLOT)	1.00000 475000.000 593750.000 F TABLE (PI .300 .700	0 0000 0000 LH) .369 .718			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .500 .900 CHILLER COOLING IN COOLING	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART L .191 .537 .906 IYPE (ITYPCH PLANT RATED	TION OF SA) 5.500 N. WATER OUTPUT BTU OAD VS FRA .200 .600 1.00 1.00 I) OUTPUT BTU	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286 .625 1.00 4 J (CFLOT) (CFLIN)	1.00000 475000.000 593750.000 TABLE (PI .300 .700	00000 0000 LH) .369 .718			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .900 CHILLER IN COOLING IN COO	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART L .191 .537 .906 IYPE (ITYPCE PLANT RATED PLANT RATED PLANT PART I	TION OF SA) 5.500 N. WATER OUTPUT BTU OAD VS FRA .200 .600 1.00 1.00 I) OUTPUT BTU INPUT BTU OAD FRAC	CCFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPUT .286 .625 1.00 4 J (CFLOT) (CFLIN) VS FRAC RA	1.00000 475000.000 593750.000 F TABLE (PI .300 .700 360000.00 92151.000	00000 0000 LH) .369 .718	.800	.812	
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .500 .900 CHILLER COOLING IN COOLING	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART L .191 .537 .906 IYPE (ITYPCE PLANT RATED PLANT RATED PLANT PART I	TION OF SA) 5.500 N. WATER OUTPUT BTU OAD VS FRA .200 .600 1.00 1.00 I) OUTPUT BTU	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPU' .286 .625 1.00 4 J (CFLOT) (CFLIN)	1.00000 475000.000 593750.000 TABLE (PI .300 .700	00000 0000 LH) .369 .718			
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .900 CHILLER IN COOLING IN COO	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART I .191 .537 .906 IYPE (ITYPCE PLANT RATED PLANT RATED PLANT PART I .000	TION OF SA) 5.500 N. WATER OUTPUT BTU OAD VS FRA .200 .600 1.00 1.00 I) OUTPUT BTU INPUT BTU .0AD FRAC V	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPUT .286 .625 1.00 4 J (CFLOT) (CFLIN) VS FRAC RAT	1.00000 475000.000 593750.000 F TABLE (PI .300 .700 360000.00 92151.000 TED COP (PI	00000 0000 LH) .369 .718	.000	.812	
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .900 CHILLER IN COOLING IN COO	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART I .191 .537 .906 IYPE (ITYPCE PLANT RATED PLANT RATED PLANT PART I .000	TION OF SA) 5.500 N. WATER OUTPUT BTU OAD VS FRA .200 .600 1.00 1.00 I) OUTPUT BTU INPUT BTU OAD FRAC	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPUT .286 .625 1.00 4 J (CFLOT) (CFLIN) VS FRAC RAT	1.00000 475000.000 593750.000 F TABLE (PI .300 .700 360000.00 92151.000	00000 0000 LH) .369 .718	.800	.812	
FAN EFFICE FAN TOTAL HEATING IN HEATING IN 100 .500 .900 CHILLER IN COOLING IN COO	CIENCY (EFAN PRESSURE I PLANT RATED PLANT PART I .191 .537 .906 IYPE (ITYPCE PLANT RATED PLANT RATED PLANT PART I .000	TION OF SA) 5.500 N. WATER OUTPUT BTU OAD VS FRA .200 .600 1.00 1.00 I) OUTPUT BTU INPUT BTU .0AD FRAC V	ACFM (OAFR) 0000E-01 (DP) J (HFLOT) (HFLIN) AC OF INPUT .286 .625 1.00 4 J (CFLOT) (CFLIN) VS FRAC RAT	1.00000 475000.000 593750.000 F TABLE (PI .300 .700 360000.00 92151.000 TED COP (PI	00000 0000 LH) .369 .718	.000	.812	

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH	LOAD	CAIN	SOLAR THRU WINDOW		PARTITI DOOR AND SLAB		WALL 0.	WINDOW O.	VENT AND INFL O.	LATENT O.
		LOSS	10.	-15.	-7.	0.	-63.	-11.	0. -96.	0.
FEB	0. -138.	GAIN LOSS	18.	0. -13.	0. -6.	o. o.	0. -51.	0. -10.	0. -81.	o. o.
MAR	1. -106.	GAIN LOSS	23.	0. -11.	0. -6.	0. 0.	0. -35.	0. -9.	0. -72.	0. 0.
APR	9.80 -45.45	GAIN	21.65	.05 -6.24	.05 -3.22	.00	2.67 -14.39	.08 -5.07	.54 -38.49	1.84 .00
MAY	30.65 -8.50		22.60	.34 -2.90	.15 -1.82	.00	12.21 -1.04	.23 -2.77	1.34 -19.48	8.22 .00
JUN	82.81 19	GAIN LOSS	22.60	1.00 -1.01	.41 87	.00	24.70 .00	.63 -1.32	3.85 -8.67	36.44
JUL	117.	GAIN LOSS	23.							
	106. 0.	LOSS							7. -6.	
SEP	60.20 -10.54	GAIN LOSS	19.56	.56 -2.59	.37 -1.42	.00	15.60 -1.30	.60 -2.20	3.96 -15.84	27.50
OCT	10.43 -42.84	GAIN LOSS	17.90	.01 -6.68	.06 -3.04	.00	2.04 -14.38	.09 -4.66	.59 -32.98	3.53 .00
NOV	1.44 -88.98	GAIN LOSS	15.90	-10.02	-4.57	.00	54.20			
	0. -172.	LOSS							0. -91.	
TOT	419. -786.	GAIN LOSS	236.	6. -85.	3. -42.	0. 0.	124. -282.	4. -66.	27. -521.	171. 0.
MAX MAX	HEATING COOLING	LOAD=	-47 34	75000. I 16002. I	BTUH ON BTUH ON	DEC 18 SEP 2	HOUR 7 HOUR 12	AME AME	BIENT TE	MP -1. MP 91.

ZONE UA BTU/HR-F 2313.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	RNAL S	JRE F			COIN-	LIGHTING THOUSAND	PROCESS MILLION	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	ВТО	ВТО
JAN	69.	74.	67.	1 29	13		.23	.09	3.78	5.09
FEB	69.	77.	67.	17 6	13	-	.20	.08	3.41	4.57
MAR	70.	78.	57.	12 24	13 19		.22	.09	3.78	5.05
APR	71.	78.	58.	25 2	12 19		.21	.09	3.66	4.87
MAY	74.	78.	69.	31 11	12		.23	.09	3.78	5.09
JUN	76.	78.	70.	29 17	1:	2 87. 5 56.	.21	.09	3.66	4.87
JUL	76.	78.	71.	5 24	1:		.22	.09	3.78	5.05
AUG	76.	78.	70.	30 26	1:	2 86. 5 57.	.23	.09	3.78	5.09
SEP	74.	79.	69.	25 16			.20	.08	3.66	4.83
OCT	71.	78.	66.	4 14		-	.23	.09	3.78	5.09
NOV	70.	77.	57.	8			.22	.09	3.66	4.92
DEC	68.	75.		23			.21	.09	3.78	5.01
YEAR				20		- - -	2.59	1.06	44.48	59.55

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	***********	OURS WHE NOT MET OOLING	N MAXIMUM BTO HEATING	
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	741 666 681 496 228 21 0 14 208 527 661 741	0 1 37 154 387 634 714 703 454 146 33	0 0 0 0 0 0 0 0	0000000000000	4598E+06 3972E+06 3815E+06 2270E+06 1269E+06 1884E+05 .0000 2885E+05 1195E+06 2061E+06 3162E+06 4750E+06	.0000 .0000 .1158E+06 .1550E+06 .2166E+06 .3108E+06 .3258E+06 .3039E+06 .3460E+06 .2303E+06 .1292E+06
YEAR	4984	3263	2	U	.4,500,00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

SYSTEM TOTALS

	HEATING MILLION	ENERG COOLING THOUSAND	Y CONSUMPT LIGHTING THOUSAND	ION PROCESS MILLION	TO FANS THOUSAND	THOUSAND MILLION				
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW			
JAN	234.63	.00	.23	.09	1.11	5.09	1.9			
FEB	192.80	.00	.20	.08	1.00	4.57	1.9			
MAR	159.85	.14	.22	.09	1.11	5.05	11.7			
APR	84.28	.92	.21	.09	1.07	4.87	14.0			
MAY	28.26	2.70	.23	.09	1.11	5.09	19.1			
JUN	2.38	6.91	.21	.09	1.07	4.87	26.6			
JUL	.00	9.47	.22	.09	1.11	5.05	27.3			
AUG	1.58	8.67	.23	.09	1.11	5.09	25.8			
SEP	26.83	5.03	.20	.08	1.07	4.83	28.1			
OCT	83.99	.95	.23	.09	1.11	5.09	20.2			
NOV	140.11	.15	.22	.09	1.07	4.92	12.5			
DEC	234.12	.00	.21	.09	1.11	5.01	1.9			
YEAR	1188.82	34.94	2.59	1.06	13.03	59.55	28.1			

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 293193. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS' TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL	WHEN LOADS MET HEAT	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1042.	675.	1.000	35.	0.	0.	0	0	.0000	4598E+06
FEB	1450.	919.	1.000	37.	0.	0.	0	0	.0000	3972E+06
MAR	1886.	1231.	1.000	43.	0.	0.	0	0	.1158E+06	3815E+06
APR	2254.	1560.	1.000	55.	0.	0.	0	0	.1550E+06	2270E+06
MAY	2493.	1774.	1.000	65.	0.	0.	0	0	.2166E+06	1269E+06
JUN	2566.	1934.	1.000	72.	0.	0.	0	0	.3108E+06	1884E+05
JUL	2473.	1957.	1.000	77.	0.	٥.	0	0	.3258E+06	.0000
AUG	2222.	1793.	1.000	76.	ο.	0.	0	0	.3039E+06	2885E+05
SEP	1821.	1346.	1.000	68.	0.	0.	0	0	.3460E+06	1195E+06
OCT	1423.	943.	1.000	57.	0.	0.	0	0	.2303E+06	2061E+06
NOV	1039.	731.	1.000	47.	0.	0.	0	0	.1292E+06	3162E+06
DEC	888.	608.	1.000	35.	0.	0.	0	2	.0000	4750E+06

```
BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 NIGHT SETBACK (FT LEONARD WOOD, MO)
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.900000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                         YEAR 1955
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 127093.000000
FLOOR AREA (SQFT) 4647.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 475000.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -360000.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 46470.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 604.000000
INFILTRATION PROFILE
                                                 1.00 1.00 1.00 1.00
                                                                                                             1.00
                                 1.00
                1.00
  1.00
                                                                              1.00
  1.00 1.00 1.00 1.00
                                                                                                              1.00
                                                                                                1.00
                                                                                                1.00
                                                                                                             1.00
                                                                              1.00
  1.00 1.00 1.00 1.00
                                                              1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 2.850000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02 C FACTOR IN INFILTRATION EQUATION (CINC) 8.33000E-03 BUILDING THERMAL MASS MCP BTU/F (CMCP) 4250.000000 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 201.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 78.000000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
                                                 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 1.000000
                                                  WALL DATA
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1862.0 1458.0 1548.0 1323.0
WINDOW AREA SQFT (AWND) 486.0 .0 253.0 94.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 48.6 .0 25.3 9.4
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
MAX SOLAR WITH NO SHADE(SOLMX) 120.0 120.0 120.0
```

U VALUE BTU/(HR-SQFT-F) (UW)	.191	.191	.191	.191	
WALL TRANSFER FUNCTIONS				00155	
CN FACTORS	.00155	.00155	.00155	.00122	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	6	6	6	0	
BN FACTORS BN (BN)	00000	00000	00000	00000	
N=1	.00000	.00000	00000	00000	
N=2	.00000	.00000	00000	00015	
N=3	.00015	.00015	.00013	00064	
N=4	.00064	00064	00004	.00060	
N=5	.00060	.00060	00000	.00015	
N=6	.00015	.00015	6	6	
NUMBER OF DN FACTORS (ND)	6	0	Ü	Ū	
DN FACTORS	1 00000	1 00000	1.00000	1.00000	
N=1	-2 49050	-2 48050	-2.48050	-2.48050	
N=2	2.46030	2.40030	2 22216	2.22216	
N=3	_ 07313	_ 97313	87313	87313	
N=4	1/200	14299	.14299	.14299	
N=5	- 00863	- 00853	00853	00853	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6 ROOF AREA SQFT (AROF) 5313	00653	00033	.00003		
ROOF AREA SQFT (AROF) 5313 ROOF U VALUE BTU/HR-SQFT-F (URI ROOF TRANS FUNCTIONS USED (1=Y) ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR .000 .000 .476E-03	.000000 m\ 1 01	0000F-01			
ROOF U VALUE BTU/HK-SQFT-F (UK	EC 0-NO)	(TPOOF)	1		
ROOF TRANS FUNCTIONS USED (1=1)	2 2967 2 2967	(1ROOF)	-		
ROOF C TRANSFER FUNCTION (CNR)	. 2.2007	735 03			
ROOF B TRANSFER FUNCTIONS (BAR) 1148-02	5728-03	953E-04		
.000 .000 .4/6E-03	.114E-02	.3726 03	. 7 3 3 1 6 4		
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.98 1.34) - 374	434E-01	170E-02		
SKYLIGHT TILT DEGREES (TILT)	3/4	.4345 OT			
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	(375K)	9999.000	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	\)			
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.00	000000E+00	•			
SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT (SKO	טטטטט פּטטטט	00000E+00			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
SKYLIGHT GLASS NUMBER (NS)	1 (51.51.)				
SKILIGHT GUADING COFFFICIENT (SHSK) C	.00000E+0	0		
STIMMED START MONTH AND DAY FOR	SHSK (MST	(NDST)	1	1	
SUMMER END MONTH AND DAY FOR SI	HSK (MND, N	IDND)	1	1	
SKY LIGHT AREA SOFT (ASKY)	0.00000E+	-00			
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SI SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-HI NIGHT TIME SKYLIGHT U BTU/SQFT-HI NIGHT TIME SKYLIGHT U BTU/SQFT-	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT-	-HR-F (SKY	'UN')	1.292998		
FRACTION OF PROCESS REAL TO IN	TEKNUT DEL	CE (FAP)	1.500000	E-01	
	0 T T 10				
90.0 90.0 90.0	90.0	90.0	90.0	75.0	75.0
75.0 75.0 75.0	75.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT PRO	FILE	_		" 0 0	70 0
55.0 55.0 55.0	55.0	55.0	55.0	70.0	70.0
					FF ^
70.0 70.0 70.0	70.0	55.0	55.0	55.0	55.0
				F.F. 0	FF ^
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

KW ----- BTU/HR ----PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING
10. 589. 22500. 10500.

PEAK VAL

```
- - - - HOURLY FRACTION OF PEAK - - - -
  HOUR
                                                         55.0
55.0
                                              .040
                                                                       90.0
                         .040
                               .040
             .040
   1
                                                                        90.0
                                    .040
                                              .040
                         .040
             .040
   2
                                                          55.0
                                              .040
                                                                        90.0
                                    .040
             .040
                         .040
   3
                                                          55.0
                                    .040
                                              .040
                                                                        90.0
             .040
   4
                         .040
                                              .040
                                                                        90.0
                         .040
                                    .040
                                                           55.0
             .040
   5
                                                          55.0
                                   .040
                                                                        90.0
             .040
                         .040
                                              .040
   6
                                                                        90.0
                                              .040
                                                           55.0
             .040
                         .040
                                   .040
   7
                              .040
             .040
                                                           55.0
                                                                        90.0
                         .040
   8
                                              .040
                                                                        90.0
                                                           55.0
             .040
   9
                         .040
                                              .040
                                                                        90.0
                                                           55.0
                         .040
             .040
  10
                                                                        90.0
                                                          55.0
                         .040
                                              .040
             .040
  11
                                              .040
                                                                        90.0
                                                           55.0
             .040
                         .040
  12
                                                                        90.0
                                                           55.0
             .040
                         .040
                                              .040
  13
                                              .040
                                                                        90.0
                                                           55.0
             .040
                         .040
  14
                                              .040
                                                                        90.0
                         .040
                                                           55.0
             .040
  15
                                              .040
                                                          55.0
                                                                        90.0
             .040
                         .040
  16
                                              .040
                                                                        90.0
            .040
                                                          55.0
                         .040
  17
                                              .040
                                                                        90.0
                                   .040
                                                          55.0
            .040
                                 .040
.040
040
                         .040
  18
                                              .040
                                                          55.0
                                                                        90.0
                         .040
  19
            .040
                                                          55.0
                                                                        90.0
                                              .040
                         .040
  20
                                              .040
                                                           55.0
                                                                        90.0
             .040
                         .040
  21
                                                                       90.0
                                              .040
                                                           55.0
                                   .040
                         .040
  22
              .040
                                   .040
                                              .040
                                                                       90.0
                                                           55.0
                         .040
              .040
                                              .040
  23
                                                                        90.0
                                                           55.0
              .040
                         .040
  24
                                               68.000000
65.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM)
                            6970.000000
ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 1.000000
HEATING PLANT RATED OUTPUT BTU (HFLOT) 475000.0000000
HEATING PLANT RATED INPUT BTU (HFLIN) 593750.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                    .369
                                                                 .400
                                 .286 .300
                                                                             .451
                      .200
 .100
            .191
                                                       .718
                                                                  .800
                                                                              .812
                                             .700
                       .600
                                  .625
 .500
            .537
                      1.00
                                  1.00
            .906
 .900
CHILLER TYPE (ITYPCH)
                                  4
COOLING PLANT RATED OUTPUT BTU (CFLOT) 360000.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 92151.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                              .000
                                  .000 .000
                                                    .000
                                                                   .000
                       .000
 .000
            .000
                                                                              .000
                                        .000 .000
                                                                   .000
           .000 .000
 .000
                                  .000
 .000 .000 .000
                                  .000
```

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITN DOOR			VENT AND	
MNITE	T.OAD		WINDOW	ROOF	SLAB	BSMT	WALL	AND WINDOW INFI	LATENT
JAN	.00	GAIN	15.89	.00	.01	.00	.∪∠	.01 .00	• 00
••••	-92.24	LOSS		-10.31	-4.60	.00	-34.11	-7.23 -57.13	.00
FEB	.00	GAIN	18.08	.00	.01	.00	.00	.02 .13	.00
	-67.12	LOSS		-8.28	-3.84	.00	-23.98	-6.04 -47.77	.00
							-00	01 07	.11
MAR	.72	GAIN	22.89	.00	.01	.00	.80	.01 .07 -5.60 -42.99	.00
	-43.11	LOSS		-7.19	-3.56	.00	-12.00	-5.60 -42.99	.00
					20	00	2 01	01 04	81
	3.92	GAIN	21.65	.00	.00	.00	3.01	.01 .04 -3.61 -26.20	.00
	-12.48	LOSS		-4.33	-2.28	.00	-3.29	-3.61 -20.20	•00
		a	22 60	0.3	01	00	8 27	.02 .13	5.11
MAY	14.59	GAIN	22.60	-2 17	.01	00	06	-3.05 -19.46	•00
	-1.10	LOSS		-3.17	-1.33	.00	.00	3.03 23.10	•
~****	35.80	CRIN	22 60	04	.04	- 00	11.33	.07 .41	19.52
JUN		LOSS	22.00	-2.36	-1.71	.00	.00	-2.63 -16.34	.00
	•								
JUL	48.04	GAIN	22.60	.27	.14	.00	15.07	.22 1.42	24.05
001		LOSS		-1.99	-1.54	.00	.00	-2.37 -14.87	.00
								40 55	00.40
AUG	38.52	GAIN	20.82	.10	.08	.00	11.68	.12 .75	20.42
	03	LOSS		-2.19	-1.55	.00	.00	.12 .75 -2.36 -14.52	•00
								.13 .89	
SEP	24.90		19.56	.03	.08	.00	- 10	-2.39 -15.86	.00
	-1.36	LOSS		-2.94	-1.53	.00	10	-2.37 13.00	
005	4.99	CATN	17 00	00	01	. 00	1.95	.02 .12	1.81
OCT	4.99 -9.86		17.90	-4.57	-1.89	.00	-2.69	-2.92 -19.70	.00
		_							
NOV	.63	GATN	15.90	.00	.03	.00	.18	.04 .27 -4.11 -29.31	.33
NOV	-34.02	LOSS	10170	-6.33	-2.67	.00	-12.65	-4.11 -29.31	.00
DEC	.00	GAIN	15.02	.00	.00	.00	.00	.00 .03 -6.93 -53.38	.00
	-90.86	LOSS		-10.25	-4.46	.00	-35.89	-6.93 -53.38	.00
TOT	172.	GAIN	236.	0.	0.	0.	61.	1. 4.	65.
	-352.	LOSS		-64.	-32.	0.	-125.	1. 4. -49358.	0.
			3.4	0002 19	ייים איי	AN 27	HOUR 7	AMBIENT TE	EMP 4.
MAX	HEATING	LOAD=	734	0073. B	TUR ON C	ED 9	HOUR 12	AMBIENT TE	MP 91.
MAX	COOLING	TOWD=	31	00//	TOR ON S.	Z	110011 12		

ZONE UA BTU/HR-F 2313.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-2.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	PERAT	SPACE URE F MIN	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH		HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	56.	79.	53.	5 29	15		.23	.09	3.78	5.09
FEB	57.	88.	53.	17 20	13	3 59. 5 15.	.20	.08	3.41	4.57
MAR	60.	93.	53.	12 4	13		.22	.09	3.78	5.05
APR	67.	93.	54.	25 1	12		.21	.09	3.66	4.87
MAY	75.	93.	55.	29 12	12	2 85. 3 4 1.	.23	.09	3.78	5.09
JUN	82.	93.	61.	29 16	12	2 87. 4 55.	.21	.09	3.66	4.87
JUL	85.	93.	65.	27 10	12	90. 5 57.	.22	.09	3.78	5.05
AUG	83.	93.	57.	30 25	12	2 86. 5 51.	.23	.09	3.78	5.09
SEP	76.	93.	55.	10 15	12	2 85. 6 39.	.20	.08	3.66	4.83
OCT	66.	93.	54.	4 28	1:		.23	.09	3.78	5.09
NOV	61.	92.	54.	8 3	1	3 77. 6 18.	.22	.09	3.66	4.92
DEC	56.	85.	53.	23 18	1	3 71. 7 -1.	.21	.09	3.78	5.01
YEAR							2.59	1.06	44.48	59.55

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-2.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	.,	HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING C	OOLING	HEATING	COOLING
JAN	661	0	0	0	3489E+06	.0000
FEB	578	4	0	0	2687E+06	.0000
MAR	523	29	Ö	0	3069E+06	.7068E+05
	264	86	Ö		1313E+06	.1589E+06
APR		185	Ŏ	-	4714E+05	.1955E+06
MAY	47		Ö	ŏ	.0000	.2798E+06
JUN	0	276	-	=	.0000	.2899E+06
JUL	0	350	Q	0	•	.2720E+06
AUG	2	303	0	•	2350E+05	
SEP	79	194	0	0	7964E+05	.3189E+06
OCT	286	74	0	0	1537E+06	.1699E+06
NOV	452	19	0	0	2504E+06	.9055E+05
	694	Ő	Ō	0	3419E+06	.0000
DEC		1520	ŏ	_	3489E+06	.3189E+06
YEAR	3586	1320	J	U		

SYSTEM TOTALS

			Y CONSUMPT	TOTAL INTERNAL MAXIMUM				
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND	
MONTH		KWH	KWH	BTU	KWH	BTU	KW	
JAN	143.28	.00	.23	.09	1.11	5.09	1.9	
FEB	111.72	.00	.20	.08	1.00	4.57	1.9	
MAR	83.83	.08	.22	.09	1.11	5.05	8.5	
APR	33.88	.40	.21	.09	1.07	4.87	14.3	
MAY	5.32	1.35	.23	.09	1.11	5.09	17.0	
JUN	.00	2.99	.21	.09	1.07	4.87	24.0	
JUL	.00	3.99	.22	.09	1.11	5.05	24.8	
AUG	.23	3.22	.23	.09	1.11	5.09	23.4	
SEP	9.01	2.08	.20	.08	1.07	4.83	26.8	
OCT	34.39	.46	.23	.09	1.11	5.09	15.2	
NOV	69.24	.07	.22	.09	1.07	4.92	10.1	
DEC	143.92	.00	.21	.09	1.11	5.01	1.9	
YEAR	634.81	14.66	2.59	1.06	13.03	59.55	26.8	

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 159075. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-2.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				VI.						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.	MAX SYS' TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1042.	675.	1.000	35.	0.	0.	0	0	.0000	3489E+06
FEB	1450.	919.	1.000	37.	0.	0.	0	0	.0000	2687E+06
MAR	1886.	1231.	1.000	43.	0.	0.	0	0	.7068E+05	3069E+06
APR	2254.	1560.	1.000	55.	0.	0.	0	0	.1589E+06	1313E+06
MAY	2493.	1774.	1.000	65.	0.	0.	0	0	.1955E+06	4714E+05
JUN	2566.	1934.	1.000	72.	0.	0.	0	0	.2798E+06	.0000
JUL	2473.	1957.	1.000	77.	0.	0.	0	0	.2899E+06	.0000
AUG	2222.	1793.	1.000	76.	ο.	0.	0	0	.2720E+06	2350E+05
SEP	1821.	1346.	1.000	68.	0.	0.	0	0	.3189E+06	7964E+05
OCT	1423.	943.	1.000	57.	0.	0.	0	0	.1699E+06	1537E+06
NOV	1039.	731.	1.000	47.	0.	0.	0	0	.9055E+05	2504E+06
DEC	888.	608.	1.000	35.	0.	0.	0	0	.0000	3419E+06

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 DDC (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.900000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000
                                                   9.700000E-01
                                                   1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                         YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRA),
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMP OF RUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 127093.000000
FLOOR AREA (SQFT) 4647.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 475000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -360000.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 46470.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 604.000000
INFILTRATION PROFILE
                                                                                     1.00 1.00
                                                                                                                       1.00
               1.00 1.00 1.00 1.00
  1.00 1.00 1.00 1.00
                                                                                                      1.00
                                                                                     1.00
                                                                                                                        1.00
                                                                                     1.00
                                                                    1.00
                                                                                                      1.00
                                                                                                                       1.00
                                  1.00
                                                   1.00
                1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)

2.850000E-01
2.165000E-02
8.330000E-03
4250.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP) 4250.000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 201.00000
                                                                     201.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 78.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
                                                         1.000000
 WINDOW SHADING FACTOR (SHD)
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1862.0 1458.0 1548.0 1323.0
WINDOW AREA SQFT (AWND) 486.0 .0 253.0 94.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 48.6 .0 25.3 9.4
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
```

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.191	.191	.191	.191	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB				00155	
CN FACTORS	.00155	.00155	.00155	.00122	
NUMBER OF BN FACTORS (NB	6	6	6	6	
BN FACTORS BN (BN)				00000	
N=1	.00000	.00000	.00000	.00000	
N=2	.00000	.00000	.00000	.00000	
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.00015	.00015	.00015	.00015	
N=4	.00064	.00064	.00064	.00064	
N=5	.00060	.00060	.00060	.00060	
N=6	.00015	.00015	.00015	.00015	
NUMBER OF DN FACTORS (ND)	6	6	6	6	
DN FACTORS					
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000	
N=1	-2 48050	-2.48050	-2.48050	-2.48050	
N=2	2.40030	2 22216	2.22216	2.22216	
N=3	2.22210	_ 97313	- 87313	87313	
N=4	0/313	14200	1/200	14299	
N=5	.14299	.14277	.14277	- 00853	
N=6	00853	00853	00853	00033	
ROOF AREA SOFT (AROF) 5313.	. 000000				
	* 1 (1)	10000E-01	_		
POOF TRANS FUNCTIONS USED (1=YE	CS. O=NO}	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	2.2867	793E-03			
DOOR D MONNEEDD FINCTIONS (RNR)	l .				
000 .000 .476E-03	.114E-02	.572E-03	.953E-04		
ROOF D TRANSFER FUNCTIONS (DNR) 1.00 -1.98 1.34 - SKYLIGHT TILT DEGREES (TILT))				
1 00 -1.98 1.34 -	374	.434E-01	170E-02		
CEVITCHT TILT DEGREES (TILT)	0.000000	E+00			
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000		
SKILIGHT ANIMOTH PROCESS	OCCOUNT + OC)			
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.00	00000E+00				
SKYLIGHT WIDTH FI (SRW) U.SC SKYLIGHT OVERHANG WIDTH FT (SKC	187 0 0	000000100			
OVERHANG HEIGHT ABOVE SKYLIGHT	אין אין פארט (אין	0.000	00E+00		
OVERHANG HEIGHT ABOVE SKILIGHT	FI (SKOII)	0.000	002.00		
SKYLIGHT GLASS NUMBER (NS)	ar.)		0		
SKYLIGHT SHADING COEFFICIENT (S SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SH	onsk) (Men	NDCTI	1	1	
SUMMER START MONTH AND DAY FOR	rem) vene	(TEGN)	1 *	1	
SUMMER END MONTH AND DAY FOR SH	ISK (MND, N	ן עאטו	-	-	
SKY LIGHT AREA SQFT (ASKY) C DAYTIME SKY LIGHT U BTU/SQFT-HF).000000E+	-00	00000		
DAYTIME SKY LIGHT U BTU/SQFT-HF	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT-	-HR-F (SKY	(UN)	1.292998	- 01	
FRACTION OF PROCESS HEAT TO INT	TERNAL SPA	CE (FAP)	1.500000	E-OT	
WEEKEND COOLING THERMOSTAT PROF	FILE				
90.0 90.0 90.0	90.0	90.0	90.0	78.0	78.0
78.0 78.0 78.0	78.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT PROF	FILE				
55.0 55.0 55.0	55.0	55.0	55.0	68.0	68.0
	=				
68.0 68.0 68.0	68.0	55.0	55.0	55.0	55.0
86.0 86.0 88.0		_ • • •			
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	30.0	3-1-		·

	INTERNAL	GAINS	AND	PROFILES	
					THERMOSTAT SET
					POINT DEG F
KW	B	ru/HR -	. – -	- - -	

KW - - - - - BTU/HR - - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
PEAK VAL 10. 589. 22500. 10500. HOUR - - - HOURLY FRACTION OF PEAK - - - -
           1
   4
   5
   6
   7
   8
   9
  10
  11
  12
  13
  14
  15
  16
  17
  18
  19
  20
  21
  22
  23
  24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 65.000000
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 6970.000000
ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00 SYSTEM SUPPLY AIR STOP TIME HR 24.000000 SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 1.000000
HEATING PLANT RATED OUTPUT BTU (HFLOT) 475000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 593750.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                  .400 .451
                                .286 .300 .369
                      .200
           .191
                                                                   .800
                                             .700
                                                       .718
                                                                               .812
                                  .625
                       .600
            .537
 .500
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
COOLING PLANT RATED OUTPUT BTU (CFLOT) 360000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 92151.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
            .000. 000. 000. 000. 000.
                                                                               .000
  .000 .000 .000 .000 .000 .000
                                                                               .000
  .000 .000 .000
```

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH LOAD		SOLAR		PARTIT DOOR				VENT AND	
MINITED TOND		MINDOM	POOF	SLAR	BSMT	WALL	WINDOW	INFL	LATENT
JAN .00	CATN	15 89	.00	.01	.00	.02	.01 -7.19 -5	.06	.00
-91.40		13.03	-10 26	-4.58	.00	-33.82	-7.19 -5	6.70	.00
FEB .00	CATN	18 08	. 00	. 01	.00	.00	.02	.13	.00
-66.46	TOSS	10.00	-8.25	-3.82	.00	-23.77	-6.01 -4	17.41	.00
MAR .68	CATN	22.89	- 00	.01	.00	.79	.01	.07	.11
_42 64	LOSS	22.05	-7.17	-3.54	.00	-11.88	-5.58 -4	12.70	.00
APR 3.79	CATN	21.65	-00	.00	.00	3.77	.01	.04	.81
	LOSS		-4.33	-2.28	.00	-3.21	-3.61 -2	26.05	.00
MAY 14.07	CATN	22.60	.01	.00	.00	8.05	.01	.04	5.03
_1 OS	LOSS	22.00	-3.20	-2.00	.00	06	-3.06 -1	19.50	.00
JUN 34.89	CATN	22.60	. 03	.02	.00	11.06	.03	.18	19.25
0014 24.03	LOSS	22.00	-2.40	-1.72	.00	.00	-2.64 - 1	L6.36	.00
JUL 46.75	CATN	22.60	.25	.10	.00	14.70	.17	1.06	23.56
.00	LOSS		-2.03	-1.53	.00	.00	-2.36 -1	L4.80	.00
•00	2000								
AUG 37.83	GAIN	20.82	.08	.05	.00	11.41	.08	.50	20.29
	LOSS		-2.22	-1.54	.00	.00	-2.35 -1	14.46	.00
SEP 24.16	GAIN	19.56	.02	.05	.00	7.85	.09	.60	12.48
-1.33	LOSS		-2.97	-1.53	.00	11	-2.38 -1	15.74	.00
OCT 4.87	GAIN	17.90	.00	.01	.00	1.90	.02	.10	1.82
-9.67	LOSS		-4.58	-1.89	.00	-2.67	-2.92 -3	19.59	.00
									2.2
NOV .63	GAIN	15.90	.00	.03	.00	.19	.04	.26	.33
NOV .63	LOSS		-6.30	-2.65	.00	-12.48	-4.08 - 2	29.06	.00
DEC .OC	GAIN	15.02	.00	.00	.00	.00	.00	.03	.00
-89.97	LOSS		-10.19	-4.43	.00	-35.57	-6.88 -5	52.96	.00
			_	_	•		0	2	0.4
TOT 168.	GAIN	236.	0.	0.	0.	50.	40	J. -255	0.
-348.	LOSS		-64.	-32.	0.	-124.	-49	-355.	0.
		<u>.</u> .			DDG 10	HOUE 7	AMDTT	אים יות אינ	ro _1
MAX HEATIN	IG LOAD=	-34	1482. E	STUH ON	DEC 18	HOUR 7	AMBII	SMI TEM	ro 01
MAX COOLIN	IG LOAD≖	30	1743. E	STUH ON	SEP 2	HOUR 12	WWRII	PIAT TEM	E 37.

ZONE UA BTU/HR-F 2313.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-1.I BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI MAX		DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	56.	79.	53.	5 29	15 7		.23	.09	3.78	5.09
FEB	57.	89.	53.	17 20	13 6		.20	.08	3.41	4.57
MAR	60.	93.	53.	12 4	13 6		.22	.09	3.78	5.05
APR	67.	93.	54.	25 1	12 1		.21	.09	3.66	4.87
MAY	75.	93.	55.	29 12	12 3		.23	.09	3.78	5.09
JUN	82.	93.	61.	29 16	12 4		.21	.09	3.66	4.87
JUL	85.	93.	65.	27 10	12		.22	.09	3.78	5.05
AUG	84.	93.	57.	30 25	12		.23	.09	3.78	5.09
SEP	76.	93.	55.	10 15	12		.20	.08	3.66	4.83
OCT	66.	93.	54.	4 28	12		.23	.09	3.78	5.09
NOV	61.	92.	54.	8 3		-	.22	.09	3.66	4.92
DEC	56.	86.	53.	23 18			.21	.09	3.78	5.01
YEAR							2.59	1.06	44.48	59.55

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-1.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	., 0	HOURS WHEN E NOT MET OOLING	MAXIMUM BTU HEATING	
JAN	661	0	0	•	3411E+06	.0000
FEB	578	2	0	•	2593E+06	.0000
MAR	523	29	0	0 -	2935E+06	.6438E+05
APR	259	82	0	0 -	1236E+06	.1473E+06
MAY	47	180	0	0 -	4716E+05	.1841E+06
JUN	Ť,	273	Ō	0	.0000	.2651E+06
JUL	ő	345	Ō	0	.0000	.2759E+06
	1	301	Ŏ	ō -	1575E+05	.2576E+06
AUG	78	192	Ö	-	7189E+05	.3017E+06
SEP		73	Ö	_	1455E+06	.1677E+06
OCT	284			~	2426E+06	.9062E+05
NOV	450	18	0	_	3415E+06	.0000
DEC	693	0	0	•	•	.3017E+06
YEAR	3574	1495	0	0 -	3415E+06	.301/E+00

SYSTEM TOTALS

			Y CONSUMPT			OTAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND KWH	MILLION BTU	DEMAND KW
MONTH	BTU	KWH	KWH	BTU	KWI	BIU	Z(V)
JAN	142.40	.00	.23	.09	1.11	5.09	1.9
FEB	111.07	.00	.20	.08	1.00	4.57	1.9
MAR	83.41	.08	.22	.09	1.11	5.05	8.4
APR	33.13	.39	.21	.09	1.07	4.87	13.5
MAY	5.32	1.31	.23	.09	1.11	5.09	16.2
JUN	.00	2.92	.21	.09	1.07	4.87	22.8
JUL	.00	3.88	.22	.09	1.11	5.05	23.7
AUG	.11	3.17	.23	.09	1.11	5.09	22.2
SEP	8.88	2.02	.20	.08	1.07	4.83	25.7
OCT	34.04	.45	.23	.09	1.11	5.09	15.2
NOV	68.61	.07	.22	.09	1.07	4.92	10.1
DEC	142.98	.00	.21	.09	1.11	5.01	1.9
YEAR	629.95	14.31	2.59	1.06	13.03	59.55	25.7

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 157771. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-1.I BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

MONTE	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS' TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1042.	675.	1.000	35.	0.	0.	0	0	.0000	3411E+06
FEB	1450.	919.	1.000	37.	0.	0.	0	0	.0000	2593E+06
MAR	1886.	1231.	1.000	43.	0.	0.	0	0	.6438E+05	2935E+06
APR	2254.	1560.	1.000	55.	0.	0.	0	0	.1473E+06	1236E+06
MAY	2493.	1774.	1.000	65.	0.	0.	0	0	.1841E+06	4716E+05
JUN	2566.	1934.	1.000	72.	0.	0.	0	0	.2651E+06	.0000
JUL	2473.	1957.	1.000	77.	0.	ο.	0	0	.2759E+06	.0000
AUG	2222.	1793.	1.000	76.	0.	0.	0	0	.2576E+06	1575E+05
SEP	1821.	1346.	1.000	68.	0.	0.	0	0	.3017E+06	7189E+05
OCT	1423.	943.	1.000	57.	0.	0.	0	0	.1677E+06	1455E+06
NOV	1039.	731.	1.000	47.	0.	0.	0	0	.9062E+05	2426E+06
DEC	888.	608.	1.000	35.	0.	0.	0	0	.0000	3415E+06

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 ECONOMIZER (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.900000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
                         YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.0000

SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01

SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.00000

INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
                                                                                    70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000 INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03 INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 127093.000000
FLOOR AREA (SQFT) 4647.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 475000.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -360000.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 46470.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 604.000000
INFILTRATION PROFILE
                                                                                                                         1.00
                                1.00 1.00 1.00
                                                                                       1.00 1.00
  1.00
                 1.00
                                                                                                       1.00
                                                                    1.00
                                                                                      1.00
                                                                                                                          1.00
  1.00 1.00 1.00
                                                   1.00
                                                                                       1.00
                                                                     1.00
                                                                                                          1.00
                                                                                                                         1.00
                                                    1.00
                                  1.00
                 1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

2.850000E-01
2.165000E-02
8.330000E-03
4250.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP) 4250.000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 201.00000
                                                                     201.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 78.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 1.000000
WINDOW SHADING FACTOR (SHD)
WALL NUMBER 1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1862.0 1458.0 1548.0 1323.0
WINDOW AREA SQFT (AWND) 486.0 .0 253.0 94.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 48.6 .0 25.3 9.4
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.191	.191	.191	•191	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	00155	00155	00155	.00155	
CN FACTORS	.00155	.00155	6	6	
NOWRER OF BN (BN)	Ü	· ·	· ·	-	
N=1	.00000	.00000	.00000	.00000	
N=2	.00000	.00000	.00000	.00000	
N=3	.00015	.00015	.00015	.00015	
N=4	.00064	.00064	.00064	.00064	
N=5	.00060	.00060	.00060	.00060	
N=6	.00015	.00015	.00015	.00015	
NUMBER OF DN FACTORS (ND)	6	6	6	6	
DN FACTORS			1 00000	1 00000	
DN FACTORS N=1 N=2 N=3 N=4 N=5	1.00000	1.00000	1.00000	2.48050	
N=2	-2.48050	-2.48050	-2.48050	2.40030	
N=3	2.22216	2.22210	_ 07313	- 87313	
N=4	8/313	14200	1/200	14299	
N=5	.14299	- 00053	_ 00853	- 00853	
N=6	00853	00833	00055	.00055	
ROOF AREA SQFT (AROF) 5313.		0000F-01			
ROOF U VALUE BTU/HR-SQFT-F (URF	7 0-NO	(TROOF)	1		
ROOF TRANS FUNCTIONS USED (1216	23, U-NO; 2 2867	(1ROOF)	-		
ROOF U VALUE BTU/HR-SQFT-F (URP ROOF TRANS FUNCTIONS USED (1=YE ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR)	2.2807	936-03			
.000 .000 .476E-03	114F-02	.572E-03	.953E-04		
DOG D TRANSFER FUNCTIONS (DNR)	.1140 02				
ROOF D TRANSFER FUNCTIONS (DNR) 1.00 -1.98 1.34	374	.434E-01	170E-02		
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00			
SEVILICHT AZIMITH ANGLE DEGREES	(AZSK)	9999.000	000		
SKYLIGHT HEIGHT FT (SKH) 0.0	00000É+00)			
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.00	0000E+00				
SKYLIGHT OVERHANG WIDTH FT (SKC)W) U.U	IOOOOOE+OO			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
SKYLIGHT GLASS NUMBER (NS)	1		•		
SKYLIGHT SHADING COEFFICIENT (S SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SE	SHSK) 0	.000000E+0	1	1	
SUMMER START MONTH AND DAY FOR	SHSK (MST	(NDST)	1	1	
SUMMER END MONTH AND DAY FOR SH	ISK (MND,N	ל מאמו אסטו	7	-	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-HF NIGHT TIME SKYLIGHT U BTU/SQFT-).UUUUUUE+	1	202008		
DAYTIME SKY LIGHT U BTU/SQFT-HF	C-E (SKIU)		1 292998		
FRACTION OF PROCESS HEAT TO INT	נתכן ז"אתי מסט זמאמטי	CF (FAD)	1.500000	E-01	
WEEKEND COOLING THERMOSTAT PROF	EKNAL SEA	CE (PAI)	1.50000		
	90.0	90.0	90.0	78.0	78.0
90.0 90.0 90.0	30.0	30.0	5000		
78.0 78.0 78.0	78.0	90.0	90.0	90.0	90.0
78.0 78.0 78.0	70.0				
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
70.0		•			
WEEKEND HEATING THERMOSTAT PROF	FILE				
55.0 55.0 55.0	55.0	55.0	55.0	68.0	68.0
			•	0	FF ^
68.0 68.0 68.0	68.0	55.0	55.0	55.0	55.0
			0	FF 0	EE ^
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F
	/			

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
10. 589. 22500. 10500. - - - - HOURLY FRACTION OF PEAK - - - -
                                                                               10500.
 PEAK VAL
1 .040 .040 .040 .040 .040 .55.0
2 .040 .040 .040 .040 .040 .55.0
3 .040 .040 .040 .040 .040 .55.0
4 .040 .040 .040 .040 .040 .55.0
5 .040 .040 .040 .040 .040 .55.0
6 .040 .040 .040 .040 .040 .55.0
7 .040 .040 .040 .040 .040 .55.0
8 .040 .040 .040 .040 .040 .55.0
9 .040 .040 .040 .040 .040 .55.0
10 .040 .040 .040 .040 .040 .55.0
11 .040 .040 .040 .040 .040 .55.0
12 .040 .040 .040 .040 .040 .55.0
13 .040 .040 .040 .040 .040 .55.0
14 .040 .040 .040 .040 .55.0
15 .040 .040 .040 .040 .55.0
16 .040 .040 .040 .040 .55.0
17 .040 .040 .040 .040 .55.0
18 .040 .040 .040 .040 .040 .55.0
19 .040 .040 .040 .040 .55.0
20 .040 .040 .040 .040 .040 .55.0
21 .040 .040 .040 .040 .55.0
22 .040 .040 .040 .040 .040 .55.0
23 .040 .040 .040 .040 .040 .55.0
24 .040 .040 .040 .040 .040 .55.0
NO HEATING ABDYE AMBIENT TEMP. OF (THLKOT) 68.000000
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 6970.00000
                                                                                                     55.0
                     .040 .040 .040 .040
                       .040
                                                                                                    55.0
                                                                                                                         90.0
                                                                                                                          90.0
                                                                                                    55.0
                                                                                                    55.0
                                                                                                  90.0
                                                                                                                           90.0
                                                                                                                          90.0
                                                                                                                          90.0
                                                                                                                          90.0
                                                                                                                          90.0
                                                                                                                           90.0
                                                                                                                            90.0
                                                                                                                            90.0
                                                                                                                          90.0
                                                                                                                          90.0
                                                                                                                          90.0
                                                                                                                         90.0
                                                                                                                          90.0
                                                                                                                         90.0
                                                                                                    55.0
                                                                                                                         90.0
90.0
                                                                                                     55.0
                                                                                                 55.0
                                                                                                       55.0
                                                                                                                            90.0
 SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 6970.000000
 SUPPLY AIR CFM (SACFM)
 ECONOMIZER HIGH TEMP LIMIT F 75.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
 MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
 FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 1.000000
 HEATING PLANT RATED OUTPUT BTU (HFLOT) 475000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 593750.000000
  HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                        .286 .300 .369 .400 .451
                                        .200
                    .191
                                                         .625 .700 .718 .800
                                                                                                                             .812
                                        .600
                      .537
    .500
 .900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
  COOLING PLANT RATED OUTPUT BTU (CFLOT) 360000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 92151.000000
  COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                                                                                   .000
                                  .000 .000 .000
                                                                                         .000
                                                                                                                 .000
    .000
                   .000
    .000 .000 .000 .000 .000
                                                                                                               .000
                                                                                                                                   .000
                                                         .000
    .000 .000 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-3.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 ECONOMIZER (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTITI DOOR AND			VENT AND	_
MNTE	H LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW INFI	LATENT
.TAN	.00	GAIN	15.89	.00	.01	.00	.02	.01 .06	.00
	-91.40	LOSS		-10.26	-4.58			.01 .06 -7.19 -56.70	
FEB	.00	GAIN	18.08	.00	.01	.00	.00	.02 .13	.00
								.02 .13 -6.01 -47.41	
MAR	.03	GAIN	22.89	.00	.01	.00	.79	.01 .07	.00
	-42.64	LOSS		-7.17	-3.54	.00	-11.88	.01 .07 -5.58 -43.24	.00
ADD	1.86	GAIN	21.65	.00	.00	.00	3.77	.01 .04	.28
	-12.16			-4.33	-2.28	.00	-3.21	-3.61 -27.45	.00
MAV	11.58	GAIN	22.60	- 01	.00	.00	8.05	.01 .04	4.99
MAI	-1.08		22.00	-3.20	-2.00	.00	06	-3.06 -21.95	.00
TIIN	33 50	CATN	22.60	.03	.02	.00	11.05	.03 .18	19.22
DON	.00	LOSS	22.00	-2.40	-1.72	.00	.00	-2.64 -17.71	.00
TIIT.	46.59	CATN	22.60	.25	.10	.00	14.70	.17 1.06	24.14
	.00	LOSS		-2.03	-1.53	.00	.00	-2.36 -13.54	.00
AUG	36.68	GAIN	20.82	.08	.05	.00	11.41	.08 .50	20.02
								.08 .50 -2.35 -15.33	
SEP	23.37	GAIN	19.56	.02	.05	.00	7.85	.09 .60	12.82
021	-1.33			-2.97	-1.53	.00	11	-2.38 -16.88	.00
OCT	4.05	GAIN	17.90	.00	.01	.00	1.90	.02 .10	1.75
	-9.67	LOSS		-4.58	-1.89	.00	-2.67	-2.92 -20.34	.00
NOV	. 21	GAIN	15.90	.00	.03	.00	.19	.04 .26 -4.08 -29.25	.10
	-33.53	LOSS		0.50	2.05			• • • • • • • • • • • • • • • • • • • •	
DEC	.00	GAIN	15.02	.00	.00	.00	.00	.00 .03	.00
								.00 .03 -6.88 -52.96	
ጥርጥ	158	GAIN	236.	0.	0.	0.	60.	0. 3.	83.
101	-348.	LOSS	220.	-64.	-32.	0.	-124.	0. 3. -49365.	0.
MAX	HEATING	LOAD=	-34	1482. E	TUH ON	DEC 18	HOUR 7	AMBIENT T	EMP -1.
MAX	COOLING	LOAD=	36	0000. E	STUH ON	JUN 23	HOUR 10	AMBIENT T	EMP 74.

ZONE UA BTU/HR-F 2313.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-3.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 ECONOMIZER (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	RNAL S	URE F			COIN- CIDENT	LIGHTING THOUSAND		HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	BIU	ВТО
JAN	56.	79.	53.	5 29	1		.23	.09	3.78	5.09
FEB	57.	89.	53.	17 20	1		.20	.08	3.41	4.57
MAR	60.	93.	53.	12 4	1		.22	.09	3.78	5.05
APR	67.	93.	54.	25 1	1:	2 77. 1 33.	.21	.09	3.66	4.87
MAY	75.	93.	55.	29 12	1:	2 85. 3 41.	.23	.09	3.78	5.09
JUN	82.	93.	61.	29 16	1:	2 87. 4 55.	.21	.09	3.66	4.87
JUL	85.	93.	65.	27 10	1	2 90. 5 57.	.22	.09	3.78	5.05
AUG	84.	93.	57.	30 25	1:		.23	.09	3.78	5.09
SEP	76.	93.	55.	10 15	1:		.20	.08	3.66	4.83
OCT	66.	93.	54.	4 28	1:		.23	.09	3.78	5.09
NOV	61.	92.	54.	8 3	1		.22	.09	3.66	4.92
DEC	56.	86.	53.	23 18	1		.21	.09	3.78	5.01
YEAR			53.	18		, -1.	2.59	1.06	44.48	59.55

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-3.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 ECONOMIZER (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	NUMBER OF I	OURS WHEN	MAXIMUM	LOADS
		INCLUDING	LOADS WERE	NOT MET	BT	
MONTH	HEATING	ECONOMIZER	HEATING CO	OOLING	HEATING	COOLING
JAN	661	0	0	•	3411E+06	.0000
FEB	578	2	0	0	2593E+06	.0000
MAR	523	29	0	0	2935E+06	.2623E+05
APR	259	82	0	0	1236E+06	.1769E+06
MAY	47	180	0	0	4716E+05	.2456E+06
JUN	0	273	Ö	1	.0000	.3600E+06
JUL	Õ	345	Ö	0	.0000	.3304E+06
AUG	1	301	Ō	0	1575E+05	.2971E+06
	78	192	Õ	0	7189E+05	.3148E+06
SEP	284	73	Ö	0	1455E+06	.1993E+06
OCT	450	18	Ö	Ö	2426E+06	.9062E+05
NOV		0	ŏ	-	3415E+06	.0000
DEC	693	-	Ö	•	3415E+06	.3600E+06
YEAR	3574	1495	U	-		

SYSTEM TOTALS

			Y CONSUMPT	ION PROCESS	TO FANS	TAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	MILLION	THOUSAND	MILLION	DEMAND KW
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	ΣW
JAN	142.40	.00	.23	.09	1.11	5.09	1.9
FEB	111.07	.00	.20	.08	1.00	4.57	1.9
MAR	83.41	.00	.22	.09	1.11	5.05	5.4
APR	33.13	.19	.21	.09	1.07	4.87	15.6
MAY	5.32	1.03	.23	.09	1.11	5.09	21.2
JUN	.00	2.76	.21	.09	1.07	4.87	28.6
JUL	.00	3.85	.22	.09	1.11	5.05	27.4
AUG	.11	3.05	.23	.09	1.11	5.09	25.3
SEP	8.88	1.91	.20	.08	1.07	4.83	26.6
OCT	34.04	.35	.23	.09	1.11	5.09	17.3
NOV	68.61	.02	.22	.09	1.07	4.92	10.1
DEC	142.98	.00	.21	.09	1.11	5.01	1.9
YEAR	629.95	13.17	2.59	1.06	13.03	59.55	28.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 156936. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-3.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 ECONOMIZER (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1042.	675.	1.000	35.	0.	0.	0	0	.0000	3411E+06
FEB	1450.	919.	1.000	37.	0.	0.	0	0	.0000	2593E+06
MAR	1886.	1231.	1.000	43.	0.	0.	0	0	.2623E+05	2935E+06
APR	2254.	1560.	1.000	55.	0.	0.	0	0	.1769E+06	1236E+06
MAY	2493.	1774.	1.000	65.	0.	0.	0	0	.2456E+06	4716E+05
JUN	2566.	1934.	1.000	72.	0.	٥.	1	0	.3600E+06	.0000
JUL	2473.	1957.	1.000	77.	0.	ο.	0	0	.3304E+06	.0000
AUG	2222.	1793.	1.000	76.	0.	ο.	0	0	.2971E+06	1575E+05
SEP	1821.	1346.	1.000	68.	0.	ο.	0	0	.3148E+06	7189E+05
OCT	1423.	943.	1.000	57.	0.	0.	0	0	.1993E+06	1455E+06
NOV	1039.	731.	1.000	47.	0.	0.	0	0	.9062E+05	2426E+06
DEC	888.	608.	1.000	35.	0.	0.	0	0	.0000	3415E+06

```
BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.900000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
 FILE NAME MO
                         YEAR 1955
 STATION 13995
 SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 127093.000000
 FLOOR AREA (SQFT) 4647.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 475000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -360000.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 46470.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 604.000000
                                                  .000
 INFILTRATION PROFILE
                               .000
                                                                                    .000
                                                                                                  .000
                                                                                                                     1.00
                                                                  .000
                .000
   .000
                                                                  1.00
                                                                                   1.00
  1.00 1.00 1.00
                                                                                                   1.00
                                                                                                                     1.00
                                                  1.00
                                                                                    .000 .000
                                                                   .000
                                                                                                                    .000
                                  .000
                                                   .000
                 .000
   .000
 A FACTOR IN INFILTRATION EQUATION (CINA) 2.850000E-01
 B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
 C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 4250.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 201.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 78.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
                                                     1.000000
 WINDOW SHADING FACTOR (SHD)
WALL DATA

1 2 3 4

AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00

WALL AREA SQFT (AWLL) 1862.0 1458.0 1548.0 1323.0

WINDOW AREA SQFT (AWND) 486.0 .0 253.0 94.0

WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0

WINDOW WIDTH FT (WNDW) 48.6 .0 25.3 9.4

WIDTH OF OVERHANG (WOH) .0 .0 .0 .0

OVERHANG HGT ABV WNDW(HOH) .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.191	.191	.191	• 191
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS		00155	00155	00155
CN FACTORS	.00155	.00155	.00155	.00133
NUMBER OF BN FACTORS (NB	6	ь	6	J
BN FACTORS BN (BN)	00000	00000	00000	. 00000
N=1	.00000	00000	.00000	.00000
N=2	.00000	00015	.00015	.00015
N=3	00013	.00013	.00064	.00064
N=4	00060	.00060	.00060	.00060
N=5	00015	.00015	.00015	.00015
N=6	6	6	6	6
DN FACTORS	Ū	_		
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=1 N=2	-2.48050	-2.48050	-2.48050	-2.48050
N=3	2.22216	2.22216	2.22216	2.22216
N=4	87313	87313	87313	87313
N=5	.14299	.14299	.14299	.14299
N=6	00853	00853	00853	00853
ROOF AREA SQFT (AROF) 5313	.000000			
		.0000E-01		
POOR TRANS FUNCTIONS USED (1=Y	ES, 0=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	2.2867	93E-03		
000 000 .476E-03	.114E-02	.572E-03	.953E-04	
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.98 1.34 SKYLIGHT TILT DEGREES (TILT)	:)			
1.00 -1.98 1.34	374	.434E-01	170E-02	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
EVVITCHT AZIMITH ANGLE DEGREES	(AZSK)	9999.000	0000	
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00)		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
CEVITCHT OVERHANG WIDTH FT (SK	OW) U.U		00m + 00	
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000)00E+00	
SKYLIGHT GLASS NUMBER (NS)	1		20	
SKYLIGHT SHADING COEFFICIENT (SHSK) U	NDCTI	1	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	HER (MUL)	''NDSI'	1	1
SUMMER END MONTH AND DAY FOR S	DEV (MIND'N	ן שאשו	-	_
SKY LIGHT AREA SUFT (ASKI)	U UUUUUUE+	-()()		
	0.000000E+	-00 1.	. 292998	
DAYTIME SKY LIGHT U BIU/SQFI-R	0.000000E+ R-F (SKYU) -HR-F (SKY	-00 1. TIN)	.292998 1.292998	
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	O.000000E+ R-F (SKYU) -HR-F (SKY TERNAL SPA	-00 [UN] CE (FAP)	.292998 1.292998 1.500000)E-01

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

					FOINT D	20 2
	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	10.	589.	22500.	10500.		
HOUR	HO	OURLY FRAC!	TION OF PE	AK		
1	.040	.040	.040	.040	70.0	75.0
2	.040	.040	.040	.040	70.0	75.0
3	.040	.040	.040	.040	70.0	75.0
4	.040	.040	.040	.040	70.0	75.0
5	.040	.040	.040	.040	70.0	75.0
6	.040	.040	.040	.040	70.0	75.0
7	.040	.040	.040	.040	70.0	75.0
8	.040	.040	.040	.040	70.0	75.0
9	.040	.040	.040	.040	70.0	75.0
10	.040	.040	.040	.040	70.0	75.0
10	.040	.040	.040	.040	70.0	75.0
12	.040	.040	.040	.040	70.0	75.0

SYSTEM T	.040 .040 .040 .040 .040 .040 .040 .040	.040 .040 .040 .040 .040 .040 .040 .040	.040 .040 .040 .040 .040 .040 .040 .040	.040 .040 .040 .040 .040 .040 .040 .040	70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0	75.0 75.0 75.0 75.0 75.0 75.0 75.0	
OVODEM C	פדג עזממוז	יא אואדיי סטי	R 24.	. 000000			
CVCTTM M	TYED AIR TEN	(P(TMXAIR)	55.00	30000	0007 61		
MIN OUTS	IDE AIR FRAC	TION OF S	ACEM (OAER	, 1.000			
FAN EFFI	CIENCY (EFAN L PRESSURE	N. WATER	(DP)	1.00000	0		
HEATING	CIENCY (EFAN L PRESSURE DE PLANT RATED	OUTPUT BT	U (HFLOT)	475000.00	0000		
אדייימיזע	PLANT RATED PLANT RATED PLANT PART I	INPUT BIO	AC OF INPU	r TABLE (F	LH)		
.100		.200	.286	.300 `	.369	.400	.451
.500	.537	.600	.625	.700	.718	.800	.812
.900		1.00					
CHILLER	TYPE (ITYPC	ל) הוויסווי פיי	4 U (CFLOT)	360000.0	00000		
COOLING	TYPE (ITYPC) PLANT RATED PLANT RATED	INPUT BTU	(CFLIN)	92151.00	0000		
COOLING	PLANT PART I	LOAD FRAC	VS FRAC RA	TED COP (F	יבר)	.000	.000
.000	.000	.000	.000	.000	.000	.000	
.000	.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000				

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-4.I BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOR AND				VENT	
			THRU		AND	DOM	233 T T	WINDOW	AND TNET	
MNTH	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	MINDOM	0.	0.
JAN	0.	GAIN	16.	0.	U.	0.	0. -63.	-11	-84	o.
	-161.									
PPR	٥.	GAIN	18.	0.	0.	0.	0.	0.	0.	0.
FED	0. -129.	LOSS		-13.	-6.	0.	-51.	-10.	-71.	0.
	1.37 -97.36	CRIN	22 88	00	. 02	.00	.03	.03	.19	.12
MAR	1.3/	TOSS	22.09	-11.24	-5.68	.00	-35.31	-8.93	-63.16	.00
	-97.30	TOSS								
APR	9.77	GAIN	21.65	.05	.05	.00	2.59	.08	.51	1.82
	9.77 -40.40	LOSS		-6.26	-3.23	.00	-14.42	-5.09	-33.25	.00
MNV	29.97	CATN	22.60	. 32	.15	.00	11.72	.23	1.27	7.58
MAI	-6.63	LOSS	22.00	-2.98	-1.87	.00	-1.09	-2.84	-16.84	.00
				00	41	00	24 47	63	3.67	32.10
JUN	79.01	GAIN	22.60	-1 04	- 41	.00	.00	-1.35	-7.49	.00
	05									
JUL	110.	GAIN	23.	2.	1.	0.	36.	2.	9.	40.
	110.	LOSS		-1.	-1.	0.	0.	-1.	-5.	0.
	99.01	CATN	20 82	1 60	74	. 00	30.52	1.13	6.46	39.42
AUG	09	TOSS	20.02	55	58	.00	.00	89	-4.85	.00
SEP	57.31	GAIN	19.56	.56	.37	.00	15.50	.60	3.80	24.37
	-8.58	LOSS		-2.61	-1.43	.00	-1.31	-2.21	-13.31	.00
	10.42	CATN	17.90	.01	.06	.00	1.98	.09	.58	3.44
001	-38.04	LOSS	17.50	-6.69	-3.05	.00	-14.41	-4.68	-27.96	.00
							00	01	ΛR	44
NOV	1.44 -81.59	GAIN	15.90	.00	.01	.00	-34 22	-7 04	-45.66	.00
	-81.59	LOSS		-10.03	-4.50	.00	54.22	7.04	45.00	• • • •
DEC	0.	GAIN	15.	0.	0.	0.	0.	0.	0.	o.
	0. -161.	LOSS		-15.	-7.	0.	-67.	-11.	-80.	0.
TOT	398. -723.	GATN	236.	6.	3.	0.	123.	4.	26.	149.
101	-723.	LOSS	2001	-86.	-42.	0.	-282.	-66.	-454.	ο.
		T 0 3 D =	1 4	6221 1	RTIIH ON	DEC 18	HOUR 8	AME	BIENT TE	MP 1.
MAX	HEATING COOLING	TOWD=	-46	15973 1	BTUH ON	SEP 2	HOUR 12	AME	BIENT TE	MP 91.
XAM	COOLING	TOND~	J4							

ZONE UA BTU/HR-F 2313.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-4.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD WO

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI	SPACE URE F MIN	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND · KWH		HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	69.	74.	67.	1 29	1	3 53. 7 14.	.23	.09	3.78	5.09
FEB	69.	77.	67.	17 6	1	3 59. 7 14 .	.20	.08	3.41	4.57
MAR	70.	78.	55.	12 24	1		.22	.09	3.78	5.05
APR	71.	78.	57.	25 2	1		.21	.09	3.66	4.87
MAY	74.	78.	69.	31 11		2 80. 5 39.	.23	.09	3.78	5.09
JUN	76.	78.	70.	29 17		2 87. 5 56.	.21	.09	3.66	4.87
JUL	76.	78.	72.	5 24		2 85. 5 65.	.22	.09	3.78	5.05
AUG	76.	78.	70.	30 26		2 86. 5 57.	.23	.09	3.78	5.09
SEP	74.	79.	69.	25 16		2 63. 6 43.	.20	.08	3.66	4.83
OCT	71.	78.	65.	4 14	_	2 83. 0 69.	.23	.09	3.78	5.09
NOV	70.	77.	55.	8 7		.3 77 . .8 69.	.22	.09	3.66	4.92
DEC	68.	75.	67.	23 18		.3 71. 7 -1.	.21	.09	3.78	5.01
YEAR							2.59	1.06	44.48	59.55

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-4.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING		HOURS WHE	MAXIMUM BTI	
MONTH	HEATING	ECONOMIZER	HEATING CO		HEATING	COOLING
JAN	741	0	0	0	4146E+06	.0000
FEB	666	1	0	0	3648E+06	.0000
MAR	681	37	0	0	3527E+06	.1157E+06
	489	157	Ō	0	1996E+06	.1547E+06
APR	200	413	ŏ	Ō	1060E+06	.2163E+06
MAY		663	ŏ	Õ	1123E+05	.3108E+06
JUN	12		Ö	Ö	.0000	.3257E+06
JUL	0	726	-	Ö	1744E+05	.3039E+06
AUG	9	714	0	_	9913E+05	.3460E+06
SEP	201	459	0	0		.2295E+06
OCT	523	153	0	0	1797E+06	
NOV	661	33	0	0	2806E+06	.1293E+06
DEC	741	0	0	0	4663E+06	.0000
YEAR	4924	3356	0	0	4663E+06	.3460E+06

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	221.77	.00	.23	.09	1.11	5.09	1.9
FEB	182.19	.00	.20	.08	1.00	4.57	1.9
MAR	150.26	.14	.22	.09	1.11	5.05	11.7
APR	78.82	.92	.21	.09	1.07	4.87	14.0
MAY	24.19	2.67	.23	.09	1.11	5.09	19.0
JUN	1.24	6.67	.21	.09	1.07	4.87	26.6
JUL	.00	9.00	.22	.09	1.11	5.05	27.3
AUG	1.02	8.20	.23	.09	1.11	5.09	25.8
SEP	24.54	4.84	.20	.08	1.07	4.83	28.1
OCT	78.73	.96	.23	.09	1.11	5.09	20.1
NOV	132.31	.15	.22	.09	1.07	4.92	12.6
DEC	221.49	.00	.21	.09	1.11	5.01	1.9
YEAR	1116.55	33.55	2.59	1.06	13.03	59.55	28.1

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 276620. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-4.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (NIGHTIME) (FT LEONARD WO

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. DEG +	DRIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1042.	675.	1.000	35.	0.	0.	0	0	.0000	4146E+06
FEB	1450.	919.	1.000	37.	0.	ο.	0	0	.0000	3648E+06
MAR	1886.	1231.	1.000	43.	0.	0.	0	0	.1157E+06	3527E+06
APR	2254.	1560.	1.000	55.	0.	٥.	0	0	.1547E+06	1996E+06
MAY	2493.	1774.	1.000	65.	ο.	0.	0	0	.2163E+06	1060E+06
JUN	2566.	1934.	1.000	72.	0.	ο.	0	0	.3108E+06	1123E+05
JUL	2473.	1957.	1.000	77.	0.	0.	0	0	.3257E+06	.0000
AUG	2222.	1793.	1.000	76.	0.	0.	0	0	.3039E+06	1744E+05
SEP	1821.	1346.	1.000	68.	0.	0.	0	0	.3460E+06	9913E+05
OCT	1423.	943.	1.000	57.	0.	0.	0	0	.2295E+06	1797E+06
NOV	1039.	731.	1.000	47.	0.	ο.	0	0	.1293E+06	2806E+06
DEC	888.	608.	1.000	35.	0.	0.	0	0	.0000	4663E+06

```
BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD WOO
  ----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.900000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                        YEAR 1955
                                           37.000000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 127093.000000
 FLOOR AREA (SQFT) 4647.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 475000.000000
 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -360000.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 46470.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 604.000000
 INFILTRATION PROFILE
                                            1.00 1.00 1.00 1.00
                                                                                                                   .000
                                   1.00
                 1.00
  1.00
          000. 000. 000. 000. 000.
                                                                                                                    .000
   .000
                                                                                                    1.00
                                                                                                                   1.00
                                                                                  1.00
  1.00 1.00 1.00 1.00
                                                                 1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 2.850000E-01
B FACTOR IN INFILTRATION EQUATION (CINA)

C FACTOR IN INFILTRATION EQUATION (CINB)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

BASEMENT UA FACTOR BTU/HR-F (BSNF)

SLAB ON GRADE FACTOR BTU/HR-F (SLBF)

SLAB ON GRADE FACTOR BTU/HR-F (SLBF)

2.03000E-02

2.165000E-02

8.330000E-03

6.000000E+00

9.000000E+00

9.000000E+00
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 78.000000
WINDOW GLASS NUMBER (NG) 30
                                                   30
 WINDOW GLASS NUMBER (NG)
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 1.000000
                                                     WALL DATA
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 1862.0 1458.0 1548.0 1323.0
WINDOW AREA SQFT (AWND) 486.0 .0 253.0 94.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 48.6 .0 25.3 9.4
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
MAX SOLAR WITH NO SHADE(SOLMX) 120.0 120.0 120.0
```

```
.191
                                                      .191
                                                                 .191
                                 .191
U VALUE BTU/(HR-SQFT-F) (UW)
WALL TRANSFER FUNCTIONS
                                 .00155 .00155 .00155 .00155
 CN FACTORS
                                                      6
                                                                 6
                                            6
 NUMBER OF BN FACTORS (NB
                                  6
 BN FACTORS BN (BN)
                                                     .00000
                                                                 .00000
                                  .00000 .00000
 N=1
                                                     .00000
                                  .00000 .00000
                                                                 .00000
                                                    .00015
 N=2
                                                                  .00015
                                          .00015
                                  .00015
                                  .00064
.00060
.00015
 N=3
                                                                 .00064
 N=4
                                                       .00060
                                                                 .00060
                                            .00015 .00015
 N=5
                                                                 .00015
 N=6
                                                        6
                                                                   6
                                             6
NUMBER OF DN FACTORS (ND)
                                  6
  DN FACTORS
                                 1.00000 1.00000 1.00000
                                                               1.00000
 N = 1
                                -2.48050 -2.48050 -2.48050 -2.48050
  N=2
                                 2.22216 2.22216 2.22216
                                                                2.22216
  N=3
                                                     -.87313
                                                                -.87313
                                 -.87313 -.87313
 N=4
                                                                  .14299
                                                       .14299
                                  .14299
                                           .14299
 N=5
                                                     -.00853
                                                                 -.00853
                                 -.00853
                                          -.00853
 N=6
ROOF AREA SQFT (AROF) 5313.000000
ROOF U VALUE BTU/HR-SQFT-F (URF) 1.010000E-01
ROOF TRANS FUNCTIONS USED (1=YES, 0=NO) (IROOF)
ROOF C TRANSFER FUNCTION (CNR) 2.286793E-03
ROOF B TRANSFER FUNCTIONS (BNR)
 .000 .000 .476E-03 .114E-02 .572E-03 .953E-04
ROOF D TRANSFER FUNCTIONS (DNR)
1.00 -1.98 1.34 -.374 .434E-01 -.170E-02

SKYLIGHT TILT DEGREES (TILT) 0.000000E+00
SKYLIGHT AZIMUTH ANGLE DEGREES (AZSK) 9999.000000
SKYLIGHT HEIGHT FT (SKH) 0.000000E+00
SKYLIGHT WIDTH FT (SKW) 0.000000E+00
SKYLIGHT WIDTH FT (SKW)
SKYLIGHT OVERHANG WIDTH FT (SKOW) 0.000000E+00
OVERHANG HEIGHT ABOVE SKYLIGHT FT (SKOH) 0.000000E+00
SKYLIGHT GLASS NUMBER (NS)
SKYLIGHT SHADING COEFFICIENT (SHSK) 0.000000E+00
                                                                        1
SUMMER START MONTH AND DAY FOR SHSK (MST, NDST)
SUMMER END MONTH AND DAY FOR SHSK (MND, NDND)
SKY LIGHT AREA SQFT (ASKY) 0.000000E+00
DAYTIME SKY LIGHT U BTU/SQFT-HR-F (SKYU) 1.292998
NIGHT TIME SKYLIGHT U BTU/SQFT-HR-F (SKYUN) 1.292998
FRACTION OF PROCESS HEAT TO INTERNAL SPACE (FAP) 1.500000
```

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

					POINT D	EG F
	KW -	-	- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	10.	589.	22500.	10500.		
HOUR	HC	URLY FRAC	TION OF PE	AK		_
1	.040	.040	.040	.040	70.0	75.0
2	.040	.040	.040	.040	70.0	75.0
3	.040	.040	.040	.040	70.0	75.0
4	.040	.040	.040	.040	70.0	75.0
5	.040	.040	.040	.040	70.0	75.0
6	.040	.040	.040	.040	70.0	75.0
7	.040	.040	.040	.040	70.0	75.0
	.040	.040	.040	.040	70.0	75.0
8 9	.040	.040	.040	.040	70.0	75.0
		.040	.040	.040	70.0	75.0
10	.040			.040	70.0	75.0
11	.040	.040	.040			75.0
12	.040	.040	.040	.040	70.0	
13	.040	.040	.040	.040	70.0	75.0

```
75.0
                                     .040
                                                 .040
                                                               70.0
              .040
                          .040
  14
                                                                           75.0
                                      .040
                                                               70.0
                                                 .040
              .040
                          .040
  15
                                                               70.0
                                                                           75.0
                                      .040
                                                 .040
                          .040
              .040
  16
                                                               70.0
                                                                            75.0
                                                 .040
                                      .040
                          .040
               .040
  17
                                                 .040
                                                                            75.0
                                                               70.0
                                      .040
                          .040
               .040
  18
                                                 .040
                                                                            75.0
                                     .040
                                                               70.0
               .040
                          .040
  19
                                                               70.0
                                                                            75.0
                                     .040
                                                 .040
                          .040
  20
               .040
                                                                            75.0
                                                 .040
                                                               70.0
                          .040
                                     .040
               .040
  21
                                                 .040
                                                               70.0
                                                                            75.0
                                      .040
                          .040
               .040
  22
                                      .040 ·
                                                                            75.0
                                                 .040
                                                               70.0
               .040
                          .040
  23
                                                                            75.0
                                     .040
                                                               70.0
                                                 .040
                          .040
  24
               .040
                                                  68.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                       65.000000
SYSTEM TYPE, (IECN)
                             6970.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 65.000000
                                       0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
                                         24.000000
SYSTEM SUPPLY AIR STOP TIME HR
                                       55.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
                           5.500000E-01
FAN EFFICIENCY (EFAN)
                                                1.000000
FAN TOTAL PRESSURE IN. WATER (DP)
HEATING PLANT RATED OUTPUT BTU (HFLOT) 475000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 593750.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                           .369
                                                                                  .451
                                                                      .400
                                               .300
                        .200
                                    .286
             .191
 .100
                                                                                  .812
                                                                      .800
                                               .700
                                                           .718
                                    .625
                        .600
 .500
             .537
                        1.00
                                    1.00
             .906
CHILLER TYPE (ITYPCH)
                                     4
                                               360000.000000
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                               92151.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                                  .000
                                                           .000
                                                                       .000
                        .000
                                    .000
                                               .000
             .000
 .000
                                                                                  .000
                                                           .000
                                                                       .000
                                    .000
                                                .000
 .000
             .000
                        .000
                         .000
                                    .000
 .000
             .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-5.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (DAYTIME)(FT LEONARD WOO

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTITI DOOR AND				VENT AND	
MNTH	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW	INFL	LATENT
JAN	0.	GAIN	16.	0.	0.	0.	0.	0.	0.	0.
	LOAD 0. -166.	LOSS		-15.	-7.	0.	-63.	-11.	-90.	0.
FEB	0. -133.	GAIN	18.	0.	0.	0.	0. _51	0. -10	0. -76.	0. 0.
	-133.	LOSS		-13.	-6.	0.	-51.	10.	, , , ,	
MAD	1	CATN	23.	0.	0.	0.	0.	0.	0.	0.
	1. -102.									
מם גו	9.57	GAIN	21.65	.05	.05	.00	2.65	.08	.46	1.54
	-43.89	LOSS		-6.26	-3.23	.00	-14.49	-5.00	-30.00	.00
MAV	29.34	GATN	22,60	.34	.15	.00	12.19	.23	1.08	6.95
	-8.43	LOSS		-2.91	-1.83	.00	-1.08	-2.70	19.03	
TIINI	78 10	GATN	22.60	1.00	.41	.00	24.70	.63	3.15	32.27
JON	78.10 19	LOSS		-1.01	87	.00	.00	-1.32	-8.51	.00
TIIT.	111.	GAIN	23.	2.	1.	0.	36.	2.	8.	42.
	111.									
AHG	101.	GAIN	21.	2.	1.	0.	31.	1.	6.	42.
	101.									
SEP	56.97	GAIN	19.56	.56	.37	.00	15.58	.60	3.31	24.76
	-10.42	LOSS		-2.60	-1.43	.00	-1.34	-2.21	13.47	•00
OCT	9.93	GAIN	17.90	.01	.06	.00	2.03	.09	.47	3.01
	-41.53	FOSS		-0.70	3.03			•		
NOV	1.43	GAIN	15.90	.00	.01	.00	.00	.01	.09	.36
	1.43 -85.91									
DEC	0. -166.	GAIN	15.	0.	0.	0.	0.	0.	0.	0.
TOT	399. -759.	GAIN	236.	6.	3.	0.	124.	4.	23.	153.
	-759.	LOSS		-86.	-42.	0.	-283.	-66.	-492.	u.
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	timam tec	T OND-	_47	5000	BTIIH ON	DEC 18	HOUR 7	AME	BIENT TE	MP -1.
XAM Yam	COOLING	LOAD=	31	5378.	BTUH ON	SEP 2	HOUR 12	AME	BIENT TE	MP -1. MP 91.
LHIA	JJ022.10			'						

ZONE UA BTU/HR-F 2313.6

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-5.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (DAYTIME)(FT LEONARD WOO

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATU MAX		DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH		HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	69.	77.	67.	1 29	13 7		.23	.09	3.78	5.09
FEB	69.	77.	67.	17 6	13 7		.20	.08	3.41	4.57
MAR	70.	78.	57.	12 24	13 19		.22	.09	3.78	5.05
APR	71.	78.	58.	25 2			.21	.09	3.66	4.87
MAY	74.	78.	69.	31 11	12		.23	.09	3.78	5.09
JUN	76.	78.	70.	29 17			.21	.09	3.66	4.87
JUL	76.	78.	71.	5 24			.22	.09	3.78	5.05
AUG	76.	78.	70.	30 26			.23	.09	3.78	5.09
SEP	74.	81.	69.	25 16			.20	.08	3.66	4.83
OCT	71.	78.	66.	4 14			.23	.09	3.78	5.09
NOV	70.	77.	57.	8 7			.22	.09	3.66	4.92
DEC	68.	74.	66.	23 18			.21	.09	3.78	5.01
YEAR							2.59	1.06	44.48	59.55

637A-5.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	NUMBER OF	HOURS WHEN	MUMIXAM	
		INCLUDING	LOADS WER	E NOT MET	BT	
MONTH	HEATING	ECONOMIZER	HEATING C	OOLING	HEATING	COOLING
JAN	739	0	0	0	4598E+06	.0000
FEB	662	2	0	0	3972E+06	.0000
	675	45	0	0	3816E+06	.1142E+06
MAR	489	159	Ö	0	2270E+06	.1501E+06
APR		398	Ö		1274E+06	.2020E+06
MAY	224		Ö	-	1884E+05	.2790E+06
JUN	21	634	_	ŏ	.0000	.2936E+06
JUL	0	714	0	-	2885E+05	.2743E+06
AUG	14	703	0	•		.3154E+06
SEP	205	457	0	•	1200E+06	
OCT	518	154	0	•	2065E+06	.2127E+06
NOV	654	36	0	•	3162E+06	.1210E+06
DEC	741	0	2	•	4750E+06	.0000
YEAR	4942	3302	2	0	4750E+06	.3154E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-5.I

SYSTEM TOTALS

		ENERG			_	OTAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	MILLION	DEMAND
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW
JAN	228.15	.00	.23	.09	1.11	5.09	1.9
FEB	187.24	.00	.20	.08	1.00	4.57	1.9
MAR	155.22	.14	.22	.09	1.11	5.05	11.6
APR	82.31	.90	.21	.09	1.07	4.87	13.7
MAY	27.83	2.61	.23	.09	1.11	5.09	17.9
JUN	2.38	6.54	.21	.09	1.07	4.87	24.3
JUL	.00	9.05	.22	.09	1.11	5.05	25.4
AUG	1.58	8.25	.23	.09	1.11	5.09	23.6
SEP	26.50	4.79	.20	.08	1.07	4.83	26.6
OCT	82.14	.92	.23	.09	1.11	5.09	18.7
NOV	136.48	.15	.22	.09	1.07	4.92	12.0
DEC	227.90	.00	.21	.09	1.11	5.01	1.9
YEAR	1157.73	33.36	2.59	1.06	13.03	59.55	26.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 285336. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637A-5.I

BLDG 637 - CHAPEL SANCTUARY AREA - ZONE 1 OUTSIDE AIR (DAYTIME) (FT LEONARD WOO

OTHER MONTHLY STATISTICS

				0.11						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1042.	675.	1.000	35.	0.	٥.	0	0	.0000	4598E+06
FEB	1450.	919.	1.000	37.	0.	ο.	0	0	.0000	3972E+06
MAR	1886.	1231.	1.000	43.	0.	0.	0	0	.1142E+06	3816E+06
APR	2254.	1560.	1.000	55.	0.	0.	0	0	.1501E+06	2270E+06
MAY	2493.	1774.	1.000	65.	0.	٥.	0	0	.2020E+06	1274E+06
JUN	2566.	1934.	1.000	72.	0.	ο.	0	0	.2790E+06	1884E+05
JUL	2473.	1957.	1.000	77.	0.	0.	0	0	.2936E+06	.0000
AUG	2222.	1793.	1.000	76.	0.	0.	0	0	.2743E+06	2885E+05
SEP	1821.	1346.	1.000	68.	0.	0.	0	0	.3154E+06	1200E+06
OCT	1423.	943.	1.000	57.	0.	0.	0	0	.2127E+06	2065E+06
NOV	1039.	731.	1.000	47.	0.	0.	0	0	.1210E+06	3162E+06
DEC	888.	608.	1.000	35.	0.	0.	0	2	.0000	4750E+06

EMCENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 04-Mar-93

DATE: BUILDING NO.:

637Z2

BLDG. TYPE: CHURCH (OFFICE AREA)

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	80.1	63.5	57.8			
COOLING (kWH)	13000	6 640	6100			

SUPPLY AIR FAN	4785 CFM
FLOOR AREA	3189 FT ²
CFMI	215 CFM
UA	1265 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON RUN DEFINITION:								
BASERUN	EXISTING OPERATION							
RUN1	NIGHT SETBACK							
RUN2	DDC CONTROL							
RUN3	ECONOMIZER							
RUN4	NIGHTIME INFILTRATION (OA)							
RUN5	DAYTIME INFILTRATION (OA)							

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS		
M~F	700	1700	50 HR	HR. ON HEATING	1300 HR/YR
SAT.	0	0	0 HR	HR. ON COOLING	871 HR/YR
SUN.	0	0	0 HR	HR. OFF HEATING	3068 HR/YR
0011.	TOTAL OCCU	JPY HR.	50 HR/WK	HR. OFF COOLING	2057 HR/YR
	TOTAL UNO		118 HR/WK		
	ANNUAL OC		2607 HR/YR		
	ANNUAL LING		6153 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 1300 = 3068 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 871 = 2057 HR/YR

HOAUHC	80.1 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	215 CFM *	6153 HR/YR			
HOAUH	80.1 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	215 CFM *	3068 HR/YR			
COAUHC	13000 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	215 CFM *	6153 HR/YR			
COAUC	13000 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	215 CFM *	2057 HR/YR			
HOAOHC	80.1 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	215 CFM *	2607 HR/YR			
НОАОН	80.1 MBtu -	0 MBtu	_	0.00E+00 Btu/CFM-HR	
1	215 CFM *	1300 HR/YR			
COAOHC	13000 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	215 CFM *	2607 HR/YR			
COAOC	13000 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	215 CFM *	871 HR/YR			
DO	1/6 (10 MINUTES PER	HOUR)	=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17	

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

CHECKED BY:

AJN 04-Mar-93

DATE: BUILDING NO .:

637Z2

BLDG. TYPE: CHURCH (OFFICE AREA)

ENERGY CONSTANT CALCULATIONS

6100 kWH - 4785 CFM * 6100 kWH -	0 kWH 871 HR/YR	=	0.00E+00 kWH/CFM-HR
	871 HR/YR		
6100 NWH			
EONO C.CC KVIII	0 kWH	_ =	0.00E+00 kWH/CFM-HR
4785 CFM *	2607 HR/YR		
13000 kWH -	6640 kWH	=	2.16E-04 kWH/CFM-HR
4785 CFM *	6153 HR/YR		
13000 kWH -	6640 kWH	_ =	6.46E-04 kWH/CFM-HR
4785 CFM *	2057 HR/YR		
6640 kWH -	6100 kWH	=	4.33E-05 kWH/CFM-HR
4785 CFM *	2607 HR/YR		
DDCCC 6640 kWH - 6100 kWH =	1.30E-04 kWH/CFM-HR		
	871 HR/YR		
80.1 MBtu -	63.54 MBtu	_ =	1.31E+04 Btu/UA
	JA		
63.54 MBtu -	57.76 MBtu	_ =	4.57E+03 Btu/UA
1265 L	JA		
2 HR/DAY X 272 DAY/	YR) – 294	HR/YR	
•		=	250 HR/YR
.915 kW X 0.012 Eff. X (32 HRS X 2 Degrees	of Reset)	
		=	13.9 kWH/TON
506 HR/YR *	0.01	=	5.06 HR/YR
	13000 kWH — 4785 CFM * 13000 kWH — 4785 CFM * 6640 kWH — 4785 CFM * 6640 kWH — 4785 CFM * 80.1 MBtu — 1265 L 63.54 MBtu — 1265 L 2 HR/DAY X 272 DAY/	13000 kWH - 6640 kWH 4785 CFM * 6153 HR/YR 13000 kWH - 6640 kWH 4785 CFM * 2057 HR/YR 6640 kWH - 6100 kWH 4785 CFM * 2607 HR/YR 6640 kWH - 6100 kWH 4785 CFM * 871 HR/YR 80.1 MBtu - 63.54 MBtu 1265 UA 63.54 MBtu - 57.76 MBtu 1265 UA 2 HR/DAY X 272 DAY/YR) - 294	13000 kWH - 6640 kWH = 4785 CFM * 6153 HR/YR 13000 kWH - 6640 kWH = 4785 CFM * 2057 HR/YR 6640 kWH - 6100 kWH = 4785 CFM * 2607 HR/YR 6640 kWH - 6100 kWH = 4785 CFM * 871 HR/YR 80.1 MBtu - 63.54 MBtu = 1265 UA 2 HR/DAY X 272 DAY/YR) - 294 HR/YR 915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset)

EMCENGINEERS, INC. DATE: 22-Feb-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE FILE: 637Z2BHL LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NO: 637 BLDG NAME: CHAPEL - ZONE 2 **BLDG FUNCTION: OFFICE AREA** # FLOORS FLOOR AREA: (SQ. FT) 3,189 219 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL EAST SOUTH NORTH 950 2,258 950 0 (SQ. FT) 358 WALLS, GROSS 149 0 106 42 0 (SQ. FT) GLASS 0 74 0 74 0 PERSONNEL DOOR (SQ. FT) 74 53 21 0 0 INSULATED PANEL (SQ. FT) 2,035 908 358 0 769 (SQ. FT) WALLS, NET 3,189 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 74 74 PERSONNEL DOOR **INSULATED PANEL** (SQ. FT) 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 2. 4" FACE BRICK 0.91 3 AIR SPACE 4" FACE BRICK 4. 6' CMU 1.89 5. AIR SPACE 6" CMU 6 0.68 INSIDE AIR FILM TOTAL R-WALL = 4.08 0.245 U=1/R**R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 1. OUTSIDE AIR FILM 0.17 0.20 2. ASPHALT SHINGLES ASPHACT SHINGLE 0.76 FELT MEMBRANE 3. FELT / PLYWOOD PLYWOOD SHEATHING 1.00 4. CEILING AIR SPACE 11.00 CEILING SPACE 5. 3' BATT INSULATION 0.45 .5' GYPSUM BOARD 3" BATT INSULATION 6. INSIDE AIR FILM 0.68 12" GYPSUM BOARD าเบเลามาเกรารแบบเคยเน้ TOTAL R-ROOF = 14.26 0.070 U=1/R1.61 PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. R-GLASS **GLASS TYPE:** SLF 0.83 CONCRETE **SLAB TYPE FLOOR:** R-BASEM 0.00 NONE **BASEMENT TYPE:** R-PANEL 4.20 **INSULATED PANEL:** R-PDOOR 2.56 METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0.000 0 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 208 2258 X CFM / SQ.FT. 0.092 AVG. WALL H/M/L (SQ.FT.) 0 0.000 = LEAKY WALL H/M/L (SQ.FT.) X CFM / SQ.FT X CFM /OPENING /HR 0 1.600 DOOR OPENINGS / HR - SINGLE DOOR 7 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 1.385 = 215 TOTAL INFILTRATION (CFM) = 18 X PANEL 'U' 0.238 **UA PANEL** = PANEL AREA 74 29 X DOOR 'U' 0.391 = PDOOR AREA 74 = **UA PDOOR** 498 X WALL 'U' 0.245 **UA WALL** = WALL AREA 2,035 224 X ROOF 'U' 0.070 = ROOF AREA 3,189 = **UA ROOF** 92 X GLASS "U" 0.621 = GLASS AREA 149 **UA GLASS** 182 X SLF 0.830 219 **UA SLAB** = SLAB PERIM. O X BASE. 'U' 0.000 =B-WALL AREA 0 UA BASEM. 222 X A. T. F. 1.035 = 215 CFM INFILTRATION = 1,265 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204 -- 000 05-Feb-93 EMC NO.:

N

BHS CEL DATE: PREPARED BY: CHECKED BY:

	ZONE
637.22	637
- HE:	BLDG:

paces	Latent	(BTU/H) (BTU/H) (BTU/H) (BTU/H)	245 155 1,225 775		TOTAL 1,225 775	
ts of Conditioned ?	Typical		Offices, hotels, apts			
Rates of Heat Gain from Occupants of Conditioned Spaces		Degree of Activity	Seated very Eaht work (writing)		The state of the s	
-	Activity	TVD®	2			
	No. of	People	5		ıc	
	Zone	Š	2	1	TOTAL	

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			
Š	Fixtures Type	Type	Description	Watts/Fixture	Total Wattage
2	35	9	Fluorescent, 2 - 34w l	84	2,940
	15		18 Incardescent - 60w	09	006
TOTAL	25			TOTAL	3,840

	Total	(BTU)	1,113	1,024	5,120	2,048	35,024						44.328
		- 1	326	300	1,500	009	10,262						12.988
	Heat Gain	to Space (%) Total Wattage	50%	15%	%06	%59	%08						71%
		Average Wattage	326	300	1,500	009	10,262						TOTAL
Peak Value for Internal Gains		Type	Refrigeration/Freezer	62 Television (Color tube)	24 Coffee Maker	46 Microwave Oven	51 Range with Oven	Transfer of the Control of the Contr					
	No of	No Fauinmen Type	1	-	-	-	-						
	Zone	Z	-						 				-

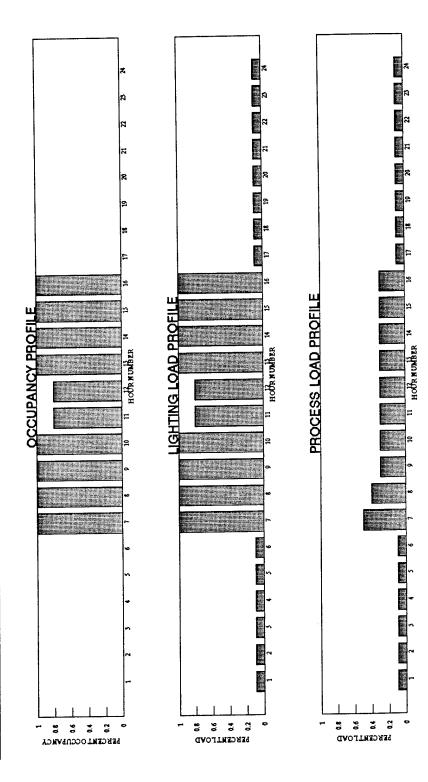
E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 – 92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000	05-Feb-93	BHS	II.C
EMC NO.:	DATE:	PREPARED BY:	CHECKED BY:

CEL 63722 CHECKED BY: FILE: BLDG: ZONE:

637

RI DG	RIDG	TYPE OF										오	Z E Z	HOUR NUMBER	띮									
TVPF	1	PROFILE	F	6	6.	4	5	9	-	8	9	10	1,7	12 13	4	15	16	17	9	19 20 2	ଷ	_	22 23 24	8
_																	[ľ	-	-	ŀ	ŀ	L	L
α	Church Office	CCCUPANCY					_	-	-	_	_	õ	3 0.8	_	_	-	-		1	+	1	+	-	+
•		- ICLTING	5	5		0	5	-	-	-	-	108	3 0 5	-	_	-	1	0.1	0.1	0.1	0.1	0.1	٠. 0	1 0.1
			;			;			-	-							1		,	,	,			•
		PROCESS	0.1	0.1	0.1	0.1	0.1	7	35	4	3	<u>်</u>	300	3 03	03 03 03 03 03	03	O E	0.1	5	5	-	7.1		-
		2000																						



BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 BASERUN (FT LEONARD WOOD)

```
----- PROGRAM CONTROL OPTIONS -----
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (ICWK) 1
WEEKEND INTERNAL GAINS FACTOR (WKEND) 7.500000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
SKY CLEARNESS FACTOR (CLN)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                          YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

TO .000000

INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 29753.000000
FLOOR AREA (SQFT) 3189.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 120000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -180000.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 31890.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 215.000000
INFILTRATION PROFILE
                                                                                                    1.00
                                                  1.00 1.00
                                                                                    1.00
                                                                                                                      1.00
                                 1.00
  1.00
                 1.00
                                                                                    1.00
                                                                                                                       1.00
                                                                  1.00
                                                                                                     1.00
 1.00 1.00 1.00
                                                  1.00
                                                                                    1.00
                                                                                                    1.00
                                                                                                                        1.00
                                                                   1.00
                                                   1.00
                1.00
                                 1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

13970.000000

13970.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 182.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 29.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
WALL NUMBER
1 2 3 4

AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00

WALL AREA SQFT (AWLL) .0 929.0 358.0 822.0

WINDOW AREA SQFT (AWND) .0 42.3 .0 106.0

WINDOW HEIGHT FT (WNDH) .0 10.0 .0 10.0

WINDOW WIDTH FT (WNDW) .0 4.2 .0 10.6

WIDTH OF OVERHANG (WOH) .0 .0 .0 .0

OVERHANG HGT ABV WNDW(HOH) .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	. 245
WALL TRANSFER FUNCTIONS	01027	01027	01937	01837
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	.01837	.01037	.01837	5
NUMBER OF BN FACTORS (NB	5	5	3	J
BN FACTORS BN (BN)	00003	00003	00003	. 00003
N=1	.00003	.00003	00283	.00283
N=2	01017	01017	.01017	.01017
N=3	.01017	00498	.00498	.00498
N=4	00037	.00037	.00037	.00037
N=5	******	*****	*****	*****
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS	J	J	•	_
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=1 N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=2 N=3	-65654	.65654	.65654	.65654
N=3 N=4	07415	07415	07415	07415
N=4 N=5	-00212	.00212	.00212	.00212
N=6	*****	*****	*****	*****
DD COMM (*DOM) 2199	000000			
ROOF AREA SQFT (AROF) ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	F) 7.00	0000E-02		
POOF TRANS FUNCTIONS USED (1=Y	ES, 0=NO)	(IROOF)	1	
POOF C TRANSFER FUNCTION (CNR)	9.4457	84E-03		
.843E-04 .287E-02 .531E-02	.118E-02	.000	843.	
POOR D TRANSFER FUNCTIONS (DNR	.)			
1 00 -1.09 .227	690E-02	.000	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
CEVITOUT ASIMITH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00)		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
SKYLIGHT OVERHANG WIDTH FT (SK	OW) U.U	00000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
SKYLIGHT GLASS NUMBER (NS)	1		_	
SKYLIGHT SHADING COEFFICIENT (SHSK) 0	.000000E+0	0	1
SUMMER START MONTH AND DAY FOR	SHSK (MST	',NDST)	, I	1
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	IDND)	1	1
SKY LIGHT AREA SQFT (ASKY)	0.00000E+	.00	202000	
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)	1.	272770 1 202000	
NIGHT TIME SKYLIGHT U BTU/SQFT	HR-F (SKY	(ND)	7 100000	NF_01
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	ITERNAL SPA	CE (FAP)	7.100000	`E∩1

-----THERNAL GAINS AND PROFILES -----THERMOSTAT SET POINT DEG F

	KW -		BTU/HR -	PEOPLE		
	LIGHTS	PROCESS S	PEOPLE ENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	4.	31473.	1225.	775.		
HOUR	HO	OURLY FRACT	ION OF PEA			
1	.100	.100	.000	.000	70.0	75.0
2	.100	.100	.000	.000	70.0	75.0
3	.100	.100	.000	.000	70.0	75.0
4	.100	.100	.000	.000	70.0	75.0
5	.100	.100	.000	.000	70.0	75.0
6	.100	.100	.000	.000	70.0	75.0
7	.200	.500	.100	.100	70.0	75.0
	1.000	.400	.100	.100	70.0	75.0
8 9	1.000	.300	.100	.100	70.0	75.0
		.300	.100	.100	70.0	75.0
10	1.000			.100	70.0	75.0
11	1.000	.300	.100		70.0	75.0
12	1.000	.300	.100	.100	70.0	75.0

NO COOL	1.000 1.000 1.000 1.000 1.000 1.000 .200 .100 .1	IENT TEMP	. OF (TCLK)	.100 .100 1.000 1.000 .100 .100 .100 .000 .000 .000	68.000000		75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0
ECONOMI:	ZER HIGH TEMP	LIMIT F	0.000000	E+00			
SYSTEM S	SUPPLY AIR ST SUPPLY AIR ST	ART TIME	HR 0.000	.000015			
SYSTEM 1	MIXED AIR TEM	P(TMXAIR)	55.00	00000			
MIN OUTS	SIDE AIR FRAC	TION OF S	acem (Oafr)	0.00	0000E+00		
FAN EFF	ICIENCY (EFAN AL PRESSURE I) 5.50 N WWTD	0000E-01	000000E-	01		
HEATING	PLANT RATED	OUTPUT BT	U (HFLOT)	120000.0	00000		
HEATING	PLANT RATED	INPUT BTU	(HFLIN)	120000.0	00000		
HEATING	PLANT PART L	OAD VS FR .560	AC OF INPUT	TABLE (.300	.710	.400
.420	.100	.560	.200	.050	.500	*,20	
.740	.500	.750	.600	.760	.700	.780	.800
.790	.900 TYPE (ITYPCH	.800	1.00 3				
COOLING	PLANT RATED	OUTPUT BT	U (CFLOT)	180000.	000000		
COOLING	PLANT RATED	INPUT BTU	(CFLIN)	46075.0	00000		
	PLANT PART L	OAD FRAC '	VS FRAC RAI	.000 COP (.000	.000	.000
.000	.000	.000	.000	.000	.000	.000	
.000	.000	.000	.000	.000	.000	.000	.000
.000		.000					

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 BASERUN (FT LEONARD WOOD)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOR AND				VENT AND	
митн	T.OAD		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW	INFL	
JAN	LOAD	GAIN	2.09	.00	.00	.00	.00	.00	.00	.04
	-33.78	LOSS		-6.49	-5.57	.00	-11.06	-2.06	-22.18	.00
										0.5
FEB			2.68	.00	.00		.02	.00	.00	.05
	-25.75	LOSS		-5.36	-4.71	.00	-8.18	-1.75	-18.81	.00
				01	00	00	47	00	00	.11
	1.17		3.32	.01	-4.39	.00	-6 16	-1 62	.00 -16.80	.00
	-19.83	LOSS		-4.79	-4.35	.00	-0.40	1.02	10.00	
N DD	5.84	GAIN	3.54	.12	.03	.00	1.69	.01	.11	.56
AFK	-7.35		3.31	-2.76	-2.59		-3.06	96	-9.22	.00
	,,,,,									
MAY	13.37	GAIN	3.88		.11	.00	3.25	.04	.30	2.09
	-1.17	LOSS		-1.56	-1.52	.00	-1.23	54	-4.57	.00
						00	4 01	11	.88	9 06
JUN			3.89				4.91	- 24	-1.87	0.00
	01	LOSS		/1	67	.00	30	24	1.0,	.00
T11T	34.77	CATN	4 01	1 26	.72	. 00	6.46	.27	2.20	10.61
JOL		LOSS	4.01		40	.00	14		-1.12	
	.00	DODD								
AUG	31.73	GAIN	3.52	.97	.56 44	.00	5.39	.20	1.58	10.39
	02	LOSS		49	44	.00	17	16	-1.22	.00
									0.1	c 20
SEP	18.76		3.01		.28		2.94	.11	.91	6.20
	-1.66	LOSS		-1.35	-1.17	.00	-1.15	43	-3.74	.00
	4 00	~~ ~~	2 50	ΛE	.04	00	76	02	.13	.98
OCT	4.80				-2.46		-3.52	89	-7.98	
	-6.58	TO22		-2.55	-2.40	.00	3.32	•••	,,,,	
NOV	1.17	CATN	1.95	.00	.00	.00	.13	.00	.00	.20
		LOSS	_,,,,	-4.32		.00	-6.50	-1.30	-12.57	.00
	13.33	2000		•••						
DEC	.00	GAIN	1.78	.00	.00	.00	.00	.00	.00 -21.09	.00
	-33.01	LOSS		-6.46	-5.45	.00	-11.20	-1.99	-21.09	.00
					•	^	26	1	6	30
TOT	138. -145.	GAIN	36.	4.	2.	0.	_E 2	_12	-121	0.
	-145.	LOSS		-38.	-33.	υ.	-55.	-12.	444	٠.
MAY	HEATTNO	T.OAD=	-12	0000.	BTUH ON	DEC 18	HOUR 7	AMI	BIENT TE	MP -1.
MAX	HEATING COOLING	LOAD=	10	0509.	BTUH ON	JUL 27	HOUR 15	AMI	BIENT TE	MP 92.

ZONE UA BTU/HR-F 860.9

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 BASERUN (FT LEONARD WOOD)

									FAN	TOTAL
INTERNA	INTE		SPACE		_	OIN-	LIGHTING		HEAT	HEAT GAIN MILLION
MONTH			URE F MIN	DAY	HR I	CIDENT AMBT.	THOUSAND KWH	MILLION BTU	MILLION BTU	BTU
JAN	70.	75.	69.	4 27	16 6	63. 4.	1.49	6.04	2.07	11.57
FEB	70.	75.	69.	9 2	16 6	61. 14.	1.34	5.42	1.87	10.39
MAR	71.	77.	69.	25 4	17 6	56. 15.	1.48	5.99	2.07	11.49
APR	72.	79.	69.	3 9	18 6	56. 30.	1.43	5.78	2.01	11.09
MAY	74.	81.	69.	10 11	17 6	53. 39.	1.49	6.04	2.07	11.57
JUN	75.	76.	70.	29 17	16 6	87. 57.	1.43	5.78	2.01	11.09
JUL	76.	76.	72.	26 10	16 6	94. 60.	1.48	5.99	2.07	11.49
AUG	75.	76.	70.	29 25	16 6	95. 51.	1.49	6.04	2.07	11.57
SEP	74.	77.	69.	24 15	19 6	59. 39.	1.42	5.73	2.01	11.01
OCT	72.	78.	69.	24 28	15 6	59. 33.	1.49	6.04	2.07	11.57
NOV	71.	76.	69.	9 3	15 6	51. 18.	1.44	5.83	2.01	11.18
DEC	70.	75.	67.	23 18	17 6	62. 0.	1.47	5.94	2.07	11.41
YEAR							17.44	70.63	24.43	135.44

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 BASERUN (FT LEONARD WOOD)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		HOURS WHEN E NOT MET OOLING	MAXIMUM BTU HEATING	
JAN	690	9	1	О -	1200E+06	.1949E+05
FEB	587	8	0	0	9855E+05	.1468E+05
MAR	538	54	0	0	9947E+05	.4209E+05
APR	296	201	0	0	6134E+05	.5730E+05
MAY	68	393	0	0	4175E+05	.7130E+05
JUN	1	577	Ö	0	-5139.	.9171E+05
JUL	ñ	674	Ō	0	.0000	.1005E+06
AUG	4	664	Ö	0	1261E+05	.8897E+05
SEP	86	443	Ö	0	3943E+05	.9244E+05
OCT	299	179	Ö	_	5635E+05	.6208E+05
	491	60	Õ	_	8459E+05	.4153E+05
NOV	710	0	7	_	1200E+06	.0000
DEC		3262	, 8	_	1200E+06	.1005E+06
YEAR	3770	3202	6	3		

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B.I

SYSTEM TOTALS

			Y CONSUMPT		TOTAL INTERNAL MAXIM				
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND		
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW		
JAN	18.77	.02	1.49	6.04	.61	11.57	7.0		
FEB	14.13	.01	1.34	5.42	.55	10.39	6.5		
MAR	10.94	.14	1.48	5.99	.61	11.49	9.2		
APR	4.54	.65	1.43	5.78	.59	11.09	10.5		
MAY	1.02	1.46	1.49	6.04	.61	11.57	11.6		
JUN	.02	2.73	1.43	5.78	.59	11.09	13.0		
JUL	.00	3.54	1.48	5.99	.61	11.49	13.6		
AUG	.06	3.29	1.49	6.04	.61	11.57	12.9		
SEP	1.29	1.98	1.42	5.73	.59	11.01	12.6		
OCT	4.50	.54	1.49	6.04	.61	11.57	10.9		
NOV	8.30	.14	1.44	5.83	.59	11.18	9.2		
DEC	18.95	.00	1.47	5.94	.61	11.41	4.7		
YEAR	82.51	14.50	17.44	70.63	7.16	135.44	13.6		

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 89866. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 BASERUN (FT LEONARD WOOD)

OTHER MONTHLY STATISTICS

				011	11011					
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT-	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SY. TEMP. DEG		HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1074.	696.	1.000	35.	0.	0.	0	1	.1949E+05	1200E+06
FEB	1494.	948.	1.000	37.	0.	0.	0	0	.1468E+05	9855E+05
MAR	1944.	1269.	1.000	43.	0.	0.	0	0	.4209E+05	9947E+05
APR	2323.	1608.	1.000	55.	0.	0.	0	0	.5730E+05	6134E+05
MAY	2570.	1829.	1.000	65.	0.	0.	0	0	.7130E+05	4175E+05
JUN	2646.	1993.	1.000	72.	0.	0.	0	0	.9171E+05	-5139.
JUL	2549.	2018.	1.000	77.	0.	0.	0	0	.1005E+06	.0000
AUG	2291.	1849.	1.000	76.	0.	0.	0	0	.8897E+05	1261E+05
SEP	1878.	1388.	1.000	68.	0.	0.	0	0	.9244E+05	3943E+05
OCT	1467.	972.	1.000	57.	0.	0.	0	0	.6208E+05	5635E+05
NOV	1071.	754.	1.000	47.	0.	0.	0	0	.4153E+05	8459E+05
DEC	916.	627.	1.000	35.	0.	0.	0	7	.0000	1200E+06

```
BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD)
```

```
----- PROGRAM CONTROL OPTIONS -----
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (ICWK) 3
WEEKEND INTERNAL GAINS FACTOR (NEW YORK)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 7.500000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
                    YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

TOTAL TRUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
SOLAR REFLECTANCE OF GROUND (AMERICAN) 70.00000
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
                                                             70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 29753.000000
FLOOR AREA (SQFT) 3189.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 120000.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -180000.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 31890.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 215.000000
INFILTRATION PROFILE
                                                                           1.00
                                                                                        1.00
                                       1.00 1.00
                                                               1.00
                         1.00
 1.00
             1.00
                                                                                        1.00
                                                               1.00
                                                  1.00
                                                                             1.00
 1.00 1.00 1.00
                                      1.00
                                                               1.00
                                                                             1.00
                                                                                        1.00
                                                  1.00
                         1.00
                                      1.00
            1.00
 1.00
                                                    4.340000E-01
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
13970.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
                                                     182.000000
SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 29.000000 WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                         WALL DATA
```

	WALL DAT			
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	.0	929.0	358.0	822.0
WINDOW AREA SQFT (AWND)	.0	42.3	.0	106.0
WINDOW HEIGHT FT (WNDH)	.0	10.0	.0	10.0
WINDOW WIDTH FT (WNDW)	.0	4.2	.0	10.6
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SOFT-F) (UW)	.245	.245	.245	.245	
WALL TRANSFER FUNCTIONS					
CN FACTORS	.01837	.01837	.01837	.01837	
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN)					
N-1	.00003	.00003	.00003	.00003	
N-3	.00283	.00283	.00283	.00283	
N-3	.01017	.01017	.01017	.01017	
N-3	.00498	.00498	.00498	.00498	
N=4	00037	00037	.00037	.00037	
N=5	.00037	******	******	*****	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS		E	E	5	
NUMBER OF DN FACTORS (ND)	5	5	J	J	
DN FACTORS		1 00000	1 00000	1 00000	
N=1	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	0/415	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	.00212	.00212	.00212	.00212	
N=6	*****	*****	*****	*****	
ROOF AREA SOFT (AROF) 3189	.000000				
ROOF U VALUE BTU/HR-SQFT-F (UR	F) 7.00	0000E-02			
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	ES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	9.4457	84E-03			
DOOR D MDANGEED FUNCTIONS / RNP	1				
.843E-04 .287E-02 .531E-02	118E-02	.000	843.		
ROOF D TRANSFER FUNCTIONS (DNR	1				
1 00 1 00 227	_ 6005-02	.000	999.		
SKYLIGHT TILT DEGREES (TILT)	0 000000	NE+00			
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	/37CV\	2000 000	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	$(\mathbf{n}_{\mathbf{n}}}}}}}}}}$,			
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	00000005+00	,			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00	000007100			
SKYLIGHT OVERHANG WIDTH FT (SK	OW) U.U	OOOOOE+OO			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	100E+00		
SKYLIGHT GLASS NUMBER (NS)	1		_		
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK) 0	0.00000E+0	00	•	
SUMMER START MONTH AND DAY FOR	SHSK (MST	(,NDST)	1	_ 1	•
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	IDND)	1	1	
SKY LIGHT AREA SQFT (ASKY)	0.00000E+	-00			
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	(NU)	1.292998		
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	7.100000	E-01	
WEEKEND COOLING THERMOSTAT PRO	FILE				
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
30.0 30.0 30.0					
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	30.0	,,,,			
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	30.0	50.0	30.0		
	יסיור				
WEEKEND HEATING THERMOSTAT PRO		EE 0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	33.0	33.0	55.0
		FF 0	EE 0	55 O	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
				FF 0	EE ^
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0

I	NTERNAL GAINS	AND	PROFILES	
_				THERMOSTAT SET
KM	BTU/HR			

PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
775.
                        31473.
                                   1225.
 PEAK VAL
           - - - - HOURLY FRACTION OF PEAK - - - -
   HOUR
90.0
            .100 .100 .000 .000
                                                           55.0
                                          90.0
                                                                        90.0
                                                                        90.0
                                                                        90.0
                                                                        90.0
                                                                        90.0
                                                                        75.0
                                                        75.0
                                                                       75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                        75.0
                                                                       90.0
                                                                       90.0
                                                                      90.0
                                                                      90.0
                                                                      90.0
                                                                      90.0
                                                                      90.0
                                                                       90.0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 4785.000000
ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.00000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 120000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 150000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                      .560 .200 .650 .300
                                                                  .710 .400
            .100
  .420
                      .750 .600 .760 .700 .780
                                                                             .800
  .740
            .500
.790 .900 .800 1.00 CHILLER TYPE (ITYPCH) 3
COOLING PLANT RATED OUTPUT BTU (CFLOT) 180000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 46075.000000 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                     .000
                                                                  .000
                                                                            .000
                   .000 .000 .000
  .000
            .000
                                            .000
                                                     .000
                                                                             .000
                                                                  .000
                                  .000
           .000
                      .000
  .000
           .000
                      .000
                                  .000
  .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-2.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

					PARTIT				VENT	
			SOLAR		DOOR AND				AND	
			THRU	POOF	AND SLAB	RCMT	WAT.T.	WINDOW	INFL	LATENT
MNTE	LOAD .09	CATN	ATKDOM	1007	200	.00	-00	.00	.00	.02
JAN	-20.45	LOSS	2.09	-5 02	-4.17	.00	-7.66	-1.54	-15.79	.00
	-20.45	TOSS		-5.02	4.1/		,,,,,			
888	.06	GAIN	2.68	- 00	.00	.00	.13	.00	.00 -13.53	.03
	-14.86	LOSS	2.00	-4.14	-3.56	.00	-5.46	-1.32	-13.53	.00
	14.00									
MAR	.54	GAIN	3.32	.01	.00		.62	.00	.01	.01
	-10.84			-3.85	-3.48	.00	-4.43	-1.29	-12.80	.00
APR	3.01	GAIN	3.54	.10	.03	.00	1.63	.01	.10	.27
•	-2.90			-2.46	-2.35	.00	-2.35	87	-8.21	.00
MAY	6.86	GAIN	3.88	.23	.07		2.45	.03	.20	1.00
	38	LOSS		-2.02	-2.06	.00	-1.84	74	-6.25	.00
							2 26	0.7	.58	3.83
JUN			3.89	.43	.20		3.36	.07	-4.67	3.63
	.00	LOSS		-1.47	-1.59	.00	-1.23	57	-4.07	.00
					.42	00	A 12	15	1.26	5 09
JUL			4.01	1.70	-1.38	.00	- 97	- 50	-4.12	.00
	.00	LOSS		-1.26	-1.36	.00	57	. 50	4.12	•••
2110	16.76	CATN	2 52	53	.34	.00	3.44	.13	.99	4.39
AUG		LOSS	3.52			.00	-1.07	49	-4.00	.00
	.00	LUSS								
SEP	9.59	GATN	3.01	.19	.15	.00	1.97	.05	.45	2.87
SEF	39		5.01	-1.77	-1.62	.00	-1.62	59	-5.16	.00
	•									
OCT	2.60	GAIN	2.50	.05	.05	.00	.76	.02	.16 -7.00	.40
	-2.70	LOSS		-2.72	-2.21	.00	-2.90	80	-7.00	.00
										4 =
NOV	.82	GAIN	1.95	.00	.00			.00	.00	.15
	-8.26	LOSS		-3.45	-2.76	.00	-4.53	-1.00	-9.26	.00
							0.7	00	00	.00
			1.78	.00	.01	.00	.07	1.46	.02 -14.78	.00
	-19.54	LOSS		-4.91	-4.00	.00	-/.68	-1.46	-14.70	.00
			26 17	2 22	1 20	00	19 70	47	3.79	18.04
TOT	73.24	GAIN	36.17	24.23	-30.57	.00	_11 74	_11 18-	3.79 -105.57	-00
	-80.33	LOSS		-34.35	-30.57	.00	47./4	11.10	100.07	
MRY	UDATING	TOAD-	_12	nnnn.	втин ом	DEC 31	HOUR 8	AME	SIENT TEN	MP 38.
MAX	COOLING	TOYD=	16	8600.	BTUH ON	JUL 16	HOUR	AME	BIENT TEN	IP 82.
MMA	COOLING	TOUD-	10							

ZONE UA BTU/HR-F 860.9

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-2.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD)

									FAN	TOTAL
INTERN	INTE	PERAT	SPACE URE F			COIN- CIDENT	THOUSAND		HEAT MILLION	HEAT GAIN MILLION
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	BTU	BTU
JAN	61.	76.	54.	4 27	18	61. 5 4.	1.49	6.04	2.07	11.57
FEB	62.	77.	54.	13 2	19	9 60. 5 14.	1.34	5.42	1.87	10.39
MAR	65.	82.	54.	28 4	20		1.48	5.99	2.07	11.49
APR	71.	90.	55.	7 9	18	3 71. 5 30.	1.43	5.78	2.01	11.09
MAY	78.	91.	55.	26 9	16	80. 5 44.	1.49	6.04	2.07	11.57
JUN	82.	91.	73.	2 17	16		1.43	5.78	2.01	11.09
JUL	84.	91.	73.	28 24	15	93. 66.	1.48	5.99	2.07	11.49
AUG	83.	91.	71.	12 25	14		1.49	6.04	2.07	11.57
SEP	78.	91.	57.	2 15	16		1.42	5.73	2.01	11.01
OCT	71.	84.	55.	14 28	20		1.49	6.04	2.07	11.57
NOV	66.	80.	54.	8 3	20	67. 5 18.	1.44	5.83	2.01	11.18
DEC	60.	74.	54.	12 18	16	5 59. 5 0.	1.47	5.94	2.07	11.41
YEAR							17.44	70.63	24.43	135.44

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-2.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		HOURS WHEN RE NOT MET COOLING	MAXIMUM BTU HEATING	
JAN	519	6	25	0	1200E+06	.2026E+05
FEB	389	5	23	0	1200E+06	.2056E+05
MAR	303	20	18	0	1200E+06	.4294E+05
APR	103	82	6	0	1200E+06	.5633E+05
MAY	9	174	0	0	1146E+06	.9014E+05
JUN	Ö	244	0	0	.0000	.1509E+06
JUL	Ô	313	0	0	.0000	.1686E+06
AUG	Ō	271	0	0	.0000	.1615E+06
SEP	13	191	0	0	9577E+05	.1476E+06
OCT	88	72	8	0	1200E+06	.6491E+05
NOV	259	34	14	0	1200E+06	.4096E+05
DEC	482	0	29	0	1200E+06	.0000
YEAR	2165	1412	123	0	1200E+06	.1686E+06

SYSTEM TOTALS

		ENERG	Y CONSUMPT	TOTAL INTERNAL MAXIMUM				
	HEATING	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND	
MONTH	MILLION BTU	KWH	KWH	BTU	KWH	BTU	KW	
JAN	14.49	.01	1.49	6.04	.61	11.57	7.1	
FEB	11.38	.01	1.34	5.42	.55	10.39	7.1	
MAR	8.90	.06	1.48	5.99	.61	11.49	9.3	
APR	3.02	.33	1.43	5.78	.59	11.09	10.4	
MAY	.46	.74	1.49	6.04	.61	11.57	12.9	
JUN	.00	1.39	1.43	5.78	.59	11.09	16.6	
JUL	.00	1.87	1.48	5.99	.61	11.49	17.6	
AUG	.00	1.65	1.49	6.04	.61	11.57	17.2	
SEP	.36	.98	1.42	5.73	.59	11.01	16.4	
OCT	2.99	.28	1.49	6.04	.61	11.57	11.1	
NOV	7.37	.10	1.44	5.83	.59	11.18	9.1	
DEC	15.39	.00	1.47	5.94	.61	11.41	4.7	
YEAR	64.36	7.43	17.44	70.63	7.16	135.44	17.6	

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 76608. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-2.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 NIGHT SETBACK (FT LEONARD WOOD)

OTHER MONTHLY STATISTICS

,	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS' TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1074.	696.	1.000	35.	0.	0.	0	25	.2026E+05	1200E+06
FEB	1494.	948.	1.000	37.	0.	0.	0	23	.2056E+05	1200E+06
MAR	1944.	1269.	1.000	43.	0.	0.	0	18	.4294E+05	1200E+06
APR	2323.	1608.	1.000	55.	0.	٥.	0	6	.5633E+05	1200E+06
MAY	2570.	1829.	1.000	65.	0.	0.	0	0	.9014E+05	1146E+06
JUN	2646.	1993.	1.000	72.	0.	0.	0	0	.1509E+06	.0000
JUL	2549.	2018.	1.000	77.	0.	0.	0	0	.1686E+06	.0000
AUG	2291.	1849.	1.000	76.	0.	0.	0	0	.1615E+06	.0000
SEP	1878.	1388.	1.000	68.	0.	0.	0	0	.1476E+06	9577E+05
OCT	1467.	972.	1.000	57.	0.	٥.	0	8	.6491E+05	1200E+06
NOV	1071.	754.	1.000	47.	0.	0.	0	14	.4096E+05	1200E+06
DEC	916.	627.	1.000	35.	0.	ο.	0	29	.0000	1200E+06

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 DDC (FT LEONARD WOOD)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 3
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 7.500000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
STATION 13995
                    YEAR 1955
SITE LATITUDE DEG (AL1) 37.000000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                               70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)
                                                              70.000000
                                                         9.00000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 29753.000000
FLOOR AREA (SQFT) 3189.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 120000.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -180000.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 31890.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 215.000000
INFILTRATION PROFILE
                                                                            1.00
                                                                                          1.00
                                                                1.00
                                        1.00 1.00
             1.00
                         1.00
 1.00
                                                  1.00
                                                                1.00
                                                                                          1.00
                                                                              1.00
 1.00 1.00 1.00
                                      1.00
                                                                1.00
                                                                              1.00
                                                                                          1.00
                                                   1.00
                         1.00
                                       1.00
             1.00
 1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
                                                        4.340000E-01
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
4.340000E-01
2.165000E-02
8.330000E-03
13970.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
                                                      182.000000
SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 29.000000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
```

	WALL DAT	'A			
WALL NUMBER	1	2	3	4	
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00	
WALL AREA SQFT (AWLL)	.0	929.0	358.0	822.0	
WINDOW AREA SQFT (AWND)	.0	42.3	.0	106.0	
WINDOW HEIGHT FT (WNDH)	.0	10.0	.0	10.0	
WINDOW WIDTH FT (WNDW)	.0	4.2	.0	10.6	
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0	
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0	

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SOFT-F) (UW)	.245	.245	.245	.245	
WALL TRANSFER FUNCTIONS					
CN FACTORS	.01837	.01837	.01837	.01837	
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN)					
N=1	.00003	.00003	.00003	.00003	
N-2	.00283	.00283	.00283	.00283	
N-3	.01017	.01017	.01017	.01017	
N-3	.00498	.00498	.00498	.00498	
N-E	.00037	.00037	.00037	.00037	
N-6	******	*****	*****	*****	
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5	
NUMBER OF DW PACTORS (ND)	3	•	•	_	
DN FACTORS	1 00000	1 00000	1 00000	1.00000	
N=1	1.00000	1.00000	_1.00000	-1 50943	
N=2	-1.50943	-1.50543	-1.50945	65654	
N=3	.05054	.03034	07415	- 07/15	
N=4	07415	07415	0/415	0/413	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	.00212	.00212	.00212	.00212	
N=6	*****	*****	*****	*****	
ROOF AREA SOFT (AROF) 3189	.000000				
ROOF U VALUE BTU/HR-SQFT-F (UR. ROOF TRANS FUNCTIONS USED (1=Y) ROOF C TRANSFER FUNCTION (CNR)	F) 7.00	0000E-02	_		
ROOF TRANS FUNCTIONS USED (1=Y)	ES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	9.4457	84E-03			
POOR B TRANSFER FUNCTIONS (BNR)				
.843E-04 .287E-02 .531E-02	.118E-02	.000	843.		
ROOF D TRANSFER FUNCTIONS (DNR)				
1 00 -1 09 .227	690E-02	.000	999.		
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00			
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000		
SEVET CHT HETCHT ET (SKH) 0.0	000000E+00	i			
SKYLIGHT WIDTH FT (SKW) 0.00	00000E+00				
SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	00000E+00			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.000	00E+00		
SKYLIGHT GLASS NUMBER (NS)	1 (DROII)	0.000			
SKILIGHT GLASS NUMBER (NO)	enek) _ U	000000E+0	0		
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SI	CHCK (MCT	י דפסטטטביט (יידפתאיי	1	1	
SUMMER START MONTH AND DAY FOR ST	N GINN NOTE	ו מאטו	1	1	
SUMMER END MONTH AND DAT FOR S	U UUUUUUT USK (MMD)N	.00	•		
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	D. E. (CVVII)	1	202008		
DAYTIME SKY LIGHT U BTU/SQFT-H	K-E (SVIO)		1 202008		
NIGHT TIME SKYLIGHT U BTO/SQFT	-HK-1 (SVI	ON (DAD)	7 100000	vr_∩1	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	7.100000	.E. 01	
WEEKEND COOLING THERMOSTAT PRO	FILE		00.0	00 0	00 0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
				00.0	00.0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT PRO	FILE				
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
	2 -	•			

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

KW - - - - - BTU/HR - - - - -PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
EAK VAL 4. 31473. 1225. 775. HOUR --- HOURLY FRACTION OF PEAK ---
 PEAK VAL
                    4. 31473. 1225. 775.

---- HOURLY FRACTION OF PEAK ----

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .100 .000 .000 .55.0 .90.0

.100 .100 .100 .100 .55.0 .90.0

.200 .500 .100 .100 .55.0 .90.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .68.0 .78.0

1.000 .300 .100 .100 .55.0 .90.0

1.000 .100 .100 .100 .55.0 .90.0

1.000 .100 .100 .100 .55.0 .90.0

.100 .100 .100 .100 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0

.100 .100 .000 .000 .55.0 .90.0
        2
        3
        4
        5
        6
        7
        8
       9
     10
     11
     12
      13
     14
     15
     16
     17
     18
     19
     20
     21
     22
     23
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 60.000000
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 4785.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 120000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 150000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                        .560 .200 .650 .300
                                                                                                                                             .710
                                                                                                                                                                      .400
               .100
   .420
                                                                                                .760 .700
                                                                                                                                                .780
                                                                                                                                                                       .800
                                                                        .600
   .740
               .500 .750
.790 .900 .800 1.00 CHILLER TYPE (ITYPCH) 3
COOLING PLANT RATED OUTPUT BTU (CFLOT) 180000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 46075.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                     .000 .000 .000 .000
                        .000 .000
   .000
                       .000 .000 .000 .000 .000 .000
   .000
                     .000 .000 .000
   .000
```

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 DDC (FT LEONARD WOOD)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH LOAD JAN .00 -19.53	GAIN	2.09	ROOF	.00	BSMT	.00	WINDOW .00 -1.51	.00	.00
FEB .00 -14.10		2.68	.00	.00 -3.48	.00	.14 -5.28	.00 -1.29	.00 -13.19	.00
MAR .26 -10.07	GAIN LOSS	3.32	.01 -3.79	.00 -3.43	.00	.62 -4.30	.00 -1.27	.01 -12.56	.00
APR 2.11 -2.53		3.54	.08 -2.50	.02 -2.39	.00	1.51 -2.38	.01 89	.05 -8.37	.24 .00
MAY 5.45		3.88	.17 -2.14	.03 -2.18	.00	2.21 -1.99	.01 78	.08 -6.62	.93 .00
JUN 12.57		3.89	.34 -1.57	.11 -1.68		3.03 -1.35	.04 60	.32 -4.96	3.93 .00
002 2	GAIN LOSS	4.01		.30 -1.44	.00	3.79 -1.06	.11 52	.90 -4.31	5.36 .00
AUG 15.25	GAIN LOSS			.22 -1.46	.00	3.07 -1.19	.08 52	.64 -4.24	4.48 .00
SEP 8.22 23	GAIN LOSS	3.01		.10 -1.72	.00	1.76 -1.77	.04 63	.30 -5.48	2.81
OCT 1.80 -2.20		2.50	.03 -2.74	.04 -2.23	.00	.68 -2.91	.01 81	-7.04	.36 .00
NOV .35 -7.58		1.95	.00 -3.42	.00 -2.73	.00	.14 -4.43	.00 99	.00 -9.12	.08
DEC .00 -18.69	GAIN LOSS	1.78	.00 -4.81	.01 -3.91	.00	.07 -7.46	.00 -1.43	.02 -14.37	.00
TOT 63.89 -75.20	GAIN LOSS	36.17	1.80 -34.56	.83 -30.73	.00	17.03 -41.56	.31 -11.24-	2.43 105.65	18.20
MAX HEATING	G LOAD=	-12 14	0000. 0225.	BTUH ON BTUH ON	DEC 31 JUL 16	HOUR E	B AMB	IENT TEN IENT TEN	MP 38.

ZONE UA BTU/HR-F 860.9

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-1.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 DDC (FT LEONARD WOOD)

									FAN	TOTAL
INTERN	INTE		SPACE		-	OIN-	LIGHTING	PROCESS	HEAT	HEAT GAIN
MONTH			URE F MIN	DAY	HR I	CIDENT AMBT.	THOUSAND KWH	MILLION BTU	MILLION BTU	MILLION BTU
JAN	60.	78.	54.	4 27	18 6	61. 4.	1.49	6.04	2.07	11.57
FEB	61.	77.	54.	13 2	19 6	60. 14.	1.34	5.42	1.87	10.39
MAR	65.	84.	54.	28 4	19 6	68. 15.	1.48	5.99	2.07	11.49
APR	71.	90.	55.	7 9	18 6	71. 30.	1.43	5.78	2.01	11.09
MAY	79.	91.	55.	26 9	16 6	80. 44.	1.49	6.04	2.07	11.57
JUN	83.	91.	73.	2 17	16 6	83. 57.	1.43	5.78	2.01	11.09
JUL	85.	91.	73.	28 24	15 6	93. 66.	1.48	5.99	2.07	11.49
AUG	84.	91.	71.	12 25	14 7	90. 55.	1.49	6.04	2.07	11.57
SEP	79.	91.	57.	2 15	16 7	91. 44.	1.42	5.73	2.01	11.01
OCT	71.	85.	55.	4 28	21 6	69. 33.	1.49	6.04	2.07	11.57
NOV	65.	82.	54.	8 3	19 6	67. 18.	1.44	5.83	2.01	11.18
DEC	60.	73.	54.	12 18	16 6	59. 0.	1.47	5.94	2.07	11.41
YEAR							17.44	70.63	24.43	135.44

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 DDC (FT LEONARD WOOD)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF LOADS WE HEATING	RE NOT MET	MAXIMUM BTU HEATING	
		_		•	10000.06	.0000
JAN	519	0	20	_	1200E+06	
FEB	382	0	17	0	1200E+06	.0000
MAR	295	10	13	0	1200E+06	.3891E+05
APR	96	63	3	0	1200E+06	.5168E+05
MAY	8	151	0	0	9571E+05	.6535E+05
JUN	0	248	0	0	.0000	.1204E+06
JUL	0	327	0	0	.0000	.1402E+06
AUG	0	277	0	0	.0000	.1314E+06
SEP	8	173	0	_	7668E+05	.1192E+06
OCT	80	52	2	•	1200E+06	.5648E+05
NOV	253	14	13	•	1200E+06	.3646E+05
DEC	488	0	23	_	1200E+06	.0000
YEAR	2129	1315	91	0	1200E+06	.1402E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-1.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	13.20	.00	1.49	6.04	.61	11.57	4.7
FEB	10.44	.00	1.34	5.42	.55	10.39	4.7
MAR	8.02	.03	1.48	5.99	.61	11.49	8.9
APR	2.74	.23	1.43	5.78	.59	11.09	10.1
MAY	.37	.60	1.49	6.04	.61	11.57	11.2
JUN	.00	1.29	1.43	5.78	.59	11.09	14.8
JUL	.00	1.80	1.48	5.99	.61	11.49	16.0
AUG	.00	1.55	1.49	6.04	.61	11.57	15.5
SEP	.16	.86	1.42	5.73	.59	11.01	14.8
OCT	2.53	.20	1.49	6.04	.61	11.57	10.5
NOV	6.68	.04	1.44	5.83	.59	11.18	8.7
DEC	14.16	.00	1.47	5.94	.61	11.41	4.7
YEAR	58.29	6.60	17.44	70.63	7.16	135.44	16.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 73814. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 637B-1.I

BLDG 637 - CHAPEL OFFICE AREA - ZONE 2 DDC (FT LEONARD WOOD)

OTHER MONTHLY STATISTICS

MONTH	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS' TEMP. I DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1074.	696.	1.000	35.	0.	0.	0	20	.0000	1200E+06
FEB	1494.	948.	1.000	37.	0.	Ο.	0	17	.0000	1200E+06
MAR	1944.	1269.	1.000	43.	0.	0.	0	13	.3891E+05	1200E+06
APR	2323.	1608.	1.000	55.	0.	0.	0	3	.5168E+05	1200E+06
MAY	2570.	1829.	1.000	65.	0.	0.	0	0	.6535E+05	9571E+05
JUN	2646.	1993.	1.000	72.	0.	0.	0	0	.1204E+06	.0000
JUL	2549.	2018.	1.000	77.	0.	0.	0	0	.1402E+06	.0000
AUG	2291.	1849.	1.000	76.	0.	0.	0	0	.1314E+06	.0000
SEP	1878.	1388.	1.000	68.	0.	0.	0	0	.1192E+06	7668E+05
OCT	1467.	972.	1.000	57.	0.	0.	0	2	.5648E+05	1200E+06
NOV	1071.	754.	1.000	47.	0.	0.	0	13	.3646E+05	1200E+06
DEC	916.	627.	1.000	35.	0.	0.	0	23	.0000	1200E+06

COMPUTER SIMULATIONS

BUILDING 639

EMCENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO.:

639Z1

BLDG. TYPE:

PX (STORE)

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	538.3	320.2	316.7	316.7	503.3	527.3
COOLING (kWH)	16700	8900	8700	8580	16360	15900

SUPPLY AIR FAN	6000 CFM
FLOOR AREA	3706 FT ²
CFMI	358 CFM
UA	1712 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	1700	2000	15 HR	HR. ON HEATING	650 HR/YR
SAT.	1700	2000	3 HR	HR. ON COOLING	436 HR/YR
SUN.	1300	2000	7 HR	HR. OFF HEATING	3718 HR/YR
0011.	TOTAL OCCU		25 HR/WK	HR. OFF COOLING	2492 HR/YR
	TOTAL UNOC		143 HR/WK		
	ANNUAL OCC	UPY HR.	1304 HR/YR		
	ANNUAL UNC		7456 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 650 = 3718 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 436 = 2492 HR/YR

HOAUHC	538.3 MBtu -	503.3 MBtu	=	1.31E+01 Btu/CFM-HR	
	358 CFM *	7456 HR/YR			
HOAUH	538.3 MBtu	503.3 MBtu	=	2.63E+01 Btu/CFM-HR	
	358 CFM *	3718 HR/YR			
COAUHO	16700 kWH -	16360 kWH	=	1.27E-04 kWH/CFM-HR	
	358 CFM *	7456 HR/YR			
COAUC	16700 kWH -	16360 kWH	=	3.81E-04 kWH/CFM-HR	
	358 CFM *	2492 HR/YR			
HOAOHO	538.3 MBtu -	527.3 MBtu	=	2.36E+01 Btu/CFM-HR	
	358 CFM *	1304 HR/YR			
НОАОН	538.3 MBtu -	527.3 MBtu	=	4.73E+01 Btu/CFM-HR	
	358 CFM *	650 HR/YR			
COAOHC	16700 kWH	15900 kWH	=	1.71E-03 kWH/CFM-HR	
	358 CFM *	1304 HR/YR			
COAOC	16700 kWH	15900 kWH	=	5.13E-03 kWH/CFM-HR	
	358 CFM *	436 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
	1/6 (10 MINUTES PER		=	0.17	

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO.: BLDG. TYPE: 639Z1 PX (STORE)

ENERGY CONSTANT CALCULATIONS

ECC 8700 kWH - 8580 kWH = 4.59E-05 kWH/CFM-HR 6000 CFM * 436 HR/YR ECHC 8700 kWH - 8580 kWH = 1.53E-05 kWH/CFM-HR 6000 CFM * 1304 HR/YR NSUCHC 16700 kWH - 8900 kWH = 1.74E-04 kWH/CFM-HR 6000 CFM * 7456 HR/YR NSUCC 16700 kWH - 8900 kWH = 5.22E-04 kWH/CFM-HR 6000 CFM * 2492 HR/YR DDCCHC 8900 kWH - 8700 kWH = 2.56E-05 kWH/CFM-HR 6000 CFM * 1304 HR/YR DDCCC 8900 kWH - 8700 kWH = 7.65E-05 kWH/CFM-HR 6000 CFM * 436 HR/YR NSC 538.3 MBtu - 320.21 MBtu = 1.27E+05 Btu/UA 1712 UA DSC 320.21 MBtu - 316.72 MBtu = 2.04E+03 Btu/UA 1712 UA OPT (2 HR/DAY X 272 DAY/YR) - 294 HR/YR = 250 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON OAR 506 HR/YR * 0.01 = 5.06 HR/YR					
BCHC	ECC	8700 kWH -	8580 kWH	=	4.59E-05 kWH/CFM-HR
Signature Sign		6000 CFM *	436 HR/YR		
NSUCHC 16700 kWH - 8900 kWH = 1.74E-04 kWH/CFM-HR	ECHC	8700 kWH -	8580 kWH	_	1.53E-05 kWH/CFM-HR
NSUCC		6000 CFM *	1304 HR/YR		
NSUCC 16700 kWH - 8900 kWH = 5.22E-04 kWH/CFM-HR 6000 CFM * 2492 HR/YR	NSUCHO	16700 kWH -	8900 kWH	_ =	1.74E-04 kWH/CFM-HR
DDCCHC		6000 CFM *	7456 HR/YR		
DDCCHC 8900 kWH - 8700 kWH = 2.56E-05 kWH/CFM-HR 6000 CFM * 1304 HR/YR DDCCC 8900 kWH - 8700 kWH = 7.65E-05 kWH/CFM-HR 6000 CFM * 436 HR/YR NSC 538.3 MBtu - 320.21 MBtu = 1.27E+05 Btu/UA 1712 UA DSC 320.21 MBtu - 316.72 MBtu = 2.04E+03 Btu/UA 1712 UA OPT (2 HR/DAY X 272 DAY/YR) - 294 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	NSUCC	16700 kWH -	8900 kWH	=	5.22E-04 kWH/CFM-HR
DDCCC 8900 kWH - 8700 kWH = 7.65E-05 kWH/CFM-HR 6000 CFM * 436 HR/YR NSC 538.3 MBtu - 320.21 MBtu = 1.27E+05 Btu/UA 1712 UA DSC 320.21 MBtu - 316.72 MBtu = 2.04E+03 Btu/UA 1712 UA OPT (2 HR/DAY X 272 DAY/YR) - 294 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON		6000 CFM *	2492 HR/YR		
DDCCC	DDCCHC	8900 kWH -	8700 kWH	_ =	2.56E-05 kWH/CFM-HR
NSC 538.3 MBtu - 320.21 MBtu = 1.27E+05 Btu/UA 1712 UA = 2.04E+03 Btu/UA			1304 HR/YR		
NSC 538.3 MBtu — 320.21 MBtu = 1.27E+05 Btu/UA 1712 UA DSC 320.21 MBtu — 316.72 MBtu = 2.04E+03 Btu/UA 1712 UA OPT (2 HR/DAY X 272 DAY/YR) — 294 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	DDCCC	8900 kWH -	8700 kWH	=	7.65E-05 kWH/CFM-HR
NSC 538.3 MBtu — 320.21 MBtu = 1.27E+05 Btu/UA 1712 UA DSC 320.21 MBtu — 316.72 MBtu = 2.04E+03 Btu/UA 1712 UA OPT (2 HR/DAY X 272 DAY/YR) — 294 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	_	6000 CFM *	436 HR/YR		
DSC 320.21 MBtu — 316.72 MBtu = 2.04E+03 Btu/UA 1712 UA OPT (2 HR/DAY X 272 DAY/YR) — 294 HR/YR = 250 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	NSC		320.21 MBtu	=	1.27E+05 Btu/UA
1712 UA OPT (2 HR/DAY X 272 DAY/YR) — 294 HR/YR = 250 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	·	1712	UA		
OPT (2 HR/DAY X 272 DAY/YR) — 294 HR/YR = 250 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	DSC	320.21 MBtu -	316.72 MBtu	=	2.04E+03 Btu/UA
= 250 HR/YR CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	•	1712			
CHWR (0.915 kW X 0.012 Eff. X 632 HRS X 2 Degrees of Reset) = 13.9 kWH/TON	OPT	(2 HR/DAY X 272 DAY	/YR) - 294	HR/YR	
= 13.9 kWH/TON		•			250 HR/YR
= 13.9 kWH/TON	CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)	
OAR 506 HR/YR * 0.01 = 5.06 HR/YR					the state of the s
	OAR	506 HR/YR *	0.01	=	5.06 HR/YR

		INIO					ATE: ^	3-Feb-93
E M C ENGINE	ERS	, INC.						BHS
PROJECT: EEAP, EMO	CS EXP	ANSION FEASI	BILITY STU	DY		_	Y:	
CLIENT CONTRACT NO	D.: DAC	A 41-92-C-	0098			<u>J</u> (OB:	3204.000
CLIENT PROJ. ENG.: [С	HK:	
CLIENT PHOJ. ENG.: L LOCATION: FT LEON/						FI	ILE:	639ABHL
В	UILDI	NG HEATIN	G LOAD	CALCUL	ATION S	HEEI		
		BLDG NAME:						
BLDG NO:		STORE AND SN		WITCH EG.				
BLDG FUNCTION:		3,706	ACK DAIL			#	FLOORS	1
FLOOR AREA: (SQ. FT)		192						Ì
SLAB PERIMETER: (FT)		132						
I. AREAS: ([] FIELD VE	RIFIED	ELEVATION PLA	NS)				TOTAL	
i. Alibio. ([] i i === i =			.NORTH	SOUTH	EAST	WEST	TOTAL	
WALLS, GROSS		(SQ. FT)	851	207	1,150	665	2,873 107	
GLASS		(SQ. FT)	0	0	107	0	172	
PERSONNEL DOOR		(SQ. FT)	0	0	49	123	53	į
INSULATED PANEL		(SQ. FT)	0	0	53	0	2,541	Ì
MALLS NET		(SQ. FT)	851	207	941	542		İ
ROOF AREA (OR CEILIN	G AREA	IF ATTIC IS UN	CONDITION	D)		(SQ. FT)	3,706	ļ
INSULATED PANEL		(SQ. FT)	53	PERSONIA		(SQ. FT)	172	
PASEMENT WALLS		(SQ. FT)	0	0	0	0		
II. CONSTRUCTION: ([1 FIELD	VERIFIED WAL	L, ROOF, WI	NDOW, DOO	R TYPES)			D 1/411/5
WALLS: (SKETCH CRO	SS SEC	TION OF WALL)				COMPONEN		R-VALUE
WALLS. (SILLIOITONO		<u></u>				OUTSIDE A		0.17
						4" FACE BR	ICK	0.43
	بـــب	41.771			3.	AIR SPACE		0.91
	Δ. Δ	4'	"FACE BRIC	K	4.	6" CMU		1.89
	۵	A1	RSPACE		5.			
	4 .		CMU		6.			
	A	6	CINO		7.			0.68
		1				TOTAL R-		4.08
							U=1/R	0.245
ROOF: (SKETCH CROS	SS SEC	TION OF ROOF)				COMPONEN		R-VALUE
HOOF. (SKETOTIONO	30 020					OUTSIDE A		0.17
1		i			2.	BUILT UP R	OOF	0.34
			- BUILT-L		3.	1.5" INSULA		4.98
			-1½"IN	MOITAJUZ	4.			1.00
ļ Ļ				AIR SHAFE	<u>≠</u> 5.	ACOUSTIC	TILE	1.79
1 4		4			0.			0.00
			-Acoust	IC TILE	7.			0.68
		/				TOTAL R-		8.95
							U=1/R	0.112
						<u> </u>	<u> </u>	4.04
GLASS TYPE:		PPG 'PENNVE	RNON' C.L.	TWNDV, SSA	A, .88 S.C.		R-GLASS	1.61 0,83
SLAB TYPE FLOOR:		CEMENT					SLF	
BASEMENT TYPE:		NONE					R-BASEM.	
INSULATED PANEL:							R-PDOOR	
PERSONNEL DOOR TY	/PE:	METAL					I W-LDOOK	2.00
III. INFILTRATION:								
TIGHT WALL H/M/L (SC	Q.FT.)			X CFM / S		0.000		0
AVG. WALL H/M/L (SQ		М	2873			0.115		330
LEAKY WALL H/M/L (S				X CFM /		0.000		0
DOOR OPENINGS / HE	R - SIN	GLE DOOR			PENING /HI			0 28
DOOR OPENINGS / HE	R - DOI	JBLE DOORS	20		PENING /HI			
				TOTAL IN	FILTRATION	(CFM)	=	358
F		DANEL ADEA	50		X PANEL "	U" 0.238	=	13
UA PAN		= PANEL AREA			X DOOR 'L			67
UA PDO		= PDOOR AREA			X WALL 'U			622
UA WAL		= WALL AREA			X ROOF 'L			414
UA ROO		= ROOF AREA			X GLASS "			66
UA GLA		= GLASS AREA			X SLF	0.830		159
UA SLA		= SLAB PERIM			X BASE. *L			0
UA BAS		=B-WALL ARE		0	X A. T. F.			371
INFILTR	ATION	= CFM	35	·				
					TOTAL U	IA (BTU/HR°	F)	1,712

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

Zone

Š

TOTAL

3204-000 03-Feb-93 DATE: PREPARED BY: CHECKED BY: EMC NO.:

ZONE

CEL 639AZ1 639A BHS FILE: BLDG:

		Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditioner	Spaces			
No. of	Activity		Typical	Sensible	ľ	TOT Sen. TOT. Lat	TOT. Lat
People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
9	4	Seated, light work, typing	Offices, hotels, apts	250	200	1 1	2,000
9	5	Standing, light work, or walking slowly	Retail store, bank	270	220	1,620	
8	3		Restaurant	225	325	4,500	
36					TOTAL	8,620	9,820

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			
No.	Fixtures	Type	Description	Watts/Fixture	Total Wattage
1	39		8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix)	168	6,552
	9	9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	252
	27		18 Incandescent – 60w	09	1,620
TOTAL	69			TOTAL	8,424

			Peak Value for Internal Gains				
Zone	No. of	Fourin			Heat Gain		Total
Ž	Equipmen	TVDe	Description	Average Wattage	ت	Total Wattage	(BTU)
	1F	84	84 Griddle/grill (large) per sq.ft. of cooking surface (4.6 to 11.8	╙	10%	5,392	18,403
	-		26 Deep Fryer	1,448	%08	1,448	4 942
	-	46	46 Microwave Oven	009	929	900	2,048
	2	91	91 Serving Cart (hot), per cu.ft. of well	601	20%	1,202	4,102
	-	51	Range with Oven	10,262	%08	10,262	35,024
	-	92		1,658	4001	1,658	5,659
	-	21	Cash Register	09	20%	09	202
<u>.</u>	-	53	Refrigerator (12 cu. ft.)	241	20%	241	823
*							
				TOTAL	61%	20,863	71,205

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

03-Feb-93	BHS	님
DATE	PREPARED BY:	CHECKED BY:

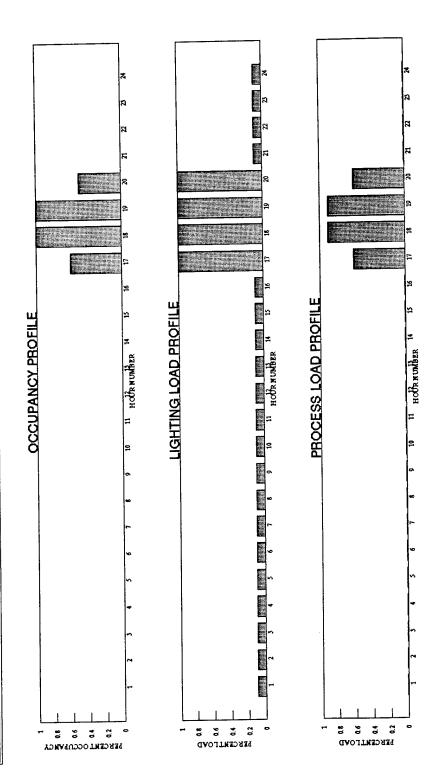
3204-000

EMC NO.:

639AZ1 639A

FILE: BLDG: ZONE:

	22 23 24			70 70	5		4	
- 1		L	+	•) -	0	2	
	17 18 19 20 21	2	3	•	2	00	9	
	6			•	_	00	2	
	18	7		•	_	r	_	
	5 16 17	9		•	_	9	0.0	
	16	L		Ľ	5	9	0.0	
	15				0		000	
ER	3 14			I.	0	1	0.0	
HOUR NUMBER	11 12 13 14 15		_	Т				
JUR	11	-	_		0.1	-	0.0	
ĭ	10			Т			000	
	6	╢			0.1		00 00 00	
	8			1	-	,	000	
	7		_	1	-		C	,
	9					•	c	2
	5	<u> </u>			0 1 0	:	c	
ļ	4		_	1	0 1	:	00 00	3
		2	_		-	;	00	,
	-	-		1		5	00	5
_			>	-	_	>	٥	>
TYPE OF		j	UNVOI 1000		UNITUR		DDCCCC	
BI DG	ū	닉	Don't Evolugion	LACTED SOL				
20	2 2		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	t		-		



```
BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 BASERUN (FT L. WOOD, MO)
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.375000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
                                                       1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK*****
 FILE NAME MO
STATION 13995
                   YEAR 1955
SITE LATITUDE DEG (AL1)
                                     37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
SOLAR ARSORRIULTY OF WALLS (AMGRN)
                                                              20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 34650.820000
                       3706.000000
FLOOR AREA (SQFT)
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 325000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -245500.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 37060.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 358.000000
INFILTRATION PROFILE
                                             .930 .930 .930
                                                                                       .930
                                    .930
                          .930
            .930
  .930
                                                                                        .930
        .930 .930 .930 .930
                                                                           .930
  .930
                                                                          .930
                                                                                       .930
 1.00 1.00 1.00 1.00
                                                 .930
                                                              .930
A FACTOR IN INFILTRATION EQUATION (CINA) 6.200000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
B FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
B FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-0
C FACTOR IN INFILTRATION EQUATION (CINC) 9170.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP) 9170.00000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 158.900000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
                              67.000000
DOOR UA BTU/HR-F (DUA)
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
                                         WALL DATA
3
                                                                              -90.00
```

U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	.245
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	01027	01837	01837	.01837
CN FACTORS	.01037	.01037	5	5
NOWBER OF BN (BN)	J	3	•	
NUMBER OF BN FACTORS (ND BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	. 00003	.00003	.00003	.00003
N=3	.00283	.00283	.00283	.00283
N=2	.01017	.01017	.01017	.01017
N = 7	.00498	.00498	.00498	.00498
N=5	.00037	.00037	.00037	.00037
N=6	*****	*****	*****	*****
NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS				
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	0/415
N=5	.00212	.00212	.00212	.00212
N=6	****	*****	*****	****
	[11] 11 31 31 31 31 3			
ROOF AREA SQF1 (AROF) ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y	(F) 1.12	0000E-01	1	
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	5.4295	66E-02		
ROOF B TRANSFER FUNCTIONS (BNF	() ()	1225104	1225+04	
.304E-02 .314E-01 .190E-01	.852E-03	.122E+04	.1225104	
ROOF D TRANSFER FUNCTIONS (DNF 1.00600 .822E-01	300E-03	000	999	
1.00600 .822E-01	3005-03	999.	,,,,,	
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGREES	0.000000 2 /378¥\	9999.000	000	
SKYLIGHT AZIMUTH ANGLE DEGREES	, (A25K))		
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	•		
SKYLIGHT WIDTH FI (SKW) 5.6 SKYLIGHT OVERHANG WIDTH FT (SF	CM) 0°C	00000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	r FT (SKOH)	0.0000	00E+00	
AWAY TOUR OF NOC NUMBER (NC)	1			
SKYLIGHT GLASS NOMBER (NO) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	(SHSK) C	.00000E+0	0	
SKILIGHT SHADING COLITICIANT OF	R SHSK (MST	NDST)	1	1
SUMMER END MONTH AND DAY FOR S	SHSK (MND, N	IDND)	1	1
SKY LIGHT AREA SOFT (ASKY)	0.000000E+	-00 ´		
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-I NIGHT TIME SKYLIGHT U BTU/SQFT	HR-F (SKYU)	1.	292998	
NIGHT TIME SKYLIGHT U BTU/SQF	r-hr-È (SKÝ	(UN)	1.292998	
FRACTION OF PROCESS HEAT TO IN	NTERNAL SPA	ACE (FAP)	6.100000	E-01

-----THERNAL GAINS AND PROFILES ------THERMOSTAT SET

POINT DEG F ---- BTU/HR ----KW PEOPLE PEOPLE HEATING COOLING LIGHTS PROCESS SENSIBLE LATENT 8. 43435. 8620. 9820. --- HOURLY FRACTION OF PEAK ----8620. 9820. PEAK VAL HOUR 70.0 76.0 .000 .100 .012 .000 1 70.0 76.0 .000 .000 .012 .100 2 .000 70.0 76.0 .012 .000 .100 3 .000 70.0 76.0 .000 .100 .012 4 .000 76.0 .000 .100 70.0 .012 5 76.0 .000 .000 70.0 .012 .100 6 .012 70.0 76.0 .000 .100 .000 7 70.0 76.0 .100 .012 .000 .000 8 70.0 76.0 .100 .000 .012 .000 9 .000 .000 76.0 70.0 .100 10 .012 76.0 .000 .000 70.0 .100 11 .012 70.0 76.0 .000 .000 .012 12 .100 70.0 76.0 .000 .000 .012 .100 13

15 16 17 18 19 20 21 22 23 24 NO HEATI NO COOLI	.100 .100 ING ABOVE AM ING BELOW AM	.012 .012 .600 .900 .900 .600 .012 .012 .012 .012 .BIENT TEMP	.000 .000 .600 1.000 .500 .000 .000 .000 . OF (THLKO	.000 .600 1.000 1.000 .500 .000	70.0	76 76 76 76 76 76 76	.0 .0 .0 .0 .0 .0
CIIDDIV A	ATD CEM (SAC	(FM) 600	0.000000	00000			
ECONOMIZ	ZER HIGH TEM	P LIMIT F	05.00 0.000	UUUUETUU			
SYSTEM S	SUPPLY AIR S	TOP TIME H	R 24	.000000			
SYSTEM N	SUPPLY AIR S SUPPLY AIR S MIXED AIR TE	MP(TMXAIR)	58.0	00000	000E-01		
MITH CHING	ZII)K AIK KKA	ICITON OF B	TIOTIT / OFFE	, –	000E-01		
MOD7	CIENCY (EFA AL PRESSURE	TN. WATER	ס (ענו)	.0000005-0)1		
	THE PARTY TO A THE PERSON TO PERSON TO PERSON TO PERSON TO PERSON TO PERSON TO PERSON TO PERSON TO PERSON TO P	ויא ידיווסידיווט ו	(I (HELOI)	330000.00	,000		
N M T N/O	DINKIN DATE	טיניא ידוניסואד ((HFLTIN)	412300.00	,000		
HEATING	PLANT PART .191	LOAD A2 LE	.286	1 1111111 1-	 ,	.400	.451
						.800	.812
.500	.537	.600	.625	.700	.718	.800	.012
000	.906	1.00	1.00				
COOT THE	ושתמס הוא כו מו	וא זינוסיזיווס ו	II (CELOI)	245500.0	00000		
COOT TNO	PLANT RATES PLANT PART	INPUT BIL	ICELLINI	TED COP (I	PLC)		
COOLING			AP LIGIO 101	122 00. (-		000	000
000	PLANT PART	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000		
.000	.000	.000	.000	.000	.000		.000
.000	.000	.000	.000	.000	.000		

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 BASERUN (FT L. WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD .00 -69.01	GAIN LOSS	1.31	ROOF .00 -13.18	PARTITN DOOR AND SLAB .00 -5.95	BSMT .00	-13.88	-1.48	-49.34	.00
FEB	.00	GAIN LOSS		00	.00 -5.06	00	. 02	.00	.00	.00
MAR	1.10 -47.24		2.27	.17 -9.86	.00 -4.67	.00	.49 -8.30	.00 -1.16	.02 -38.94	.19 .00
	6.48 -22.41		2.40	.73 -5.88	.04 -2.69	.00	1.82 -3.88	.01 67	.25 -22.22	.96 .00
MAY	15.90 -7.39		2.64	1.46 -3.52	.12 -1.42		3.71 -1.26	.03 34	.78 -10.95	3.78 .00
JUN	35.33 -1.02		2.76	2.21 -2.06	.30 61	.00	5.51 21	.07 15	2.02 -4.24	15.47 .00
JUL	49.29 39	GAIN LOSS	2.78	3.07 -1.59	.71 38	.00	7.15 09	.18 09	4.83 -2.75	21.45
AUG	44.47 71	GAIN LOSS	2.48	2.55 -1.77	.54 44	.00	5.83 14	.13 11	3.58 -2.91	20.50
SEP	24.34 -6.64	GAIN LOSS	2.06	1.35 -3.25	.29 -1.16	.00	3.27 -1.30	.07 28	2.03 -9.65	10.86
OCT	5.31 -20.90	GAIN LOSS	1.65	.37 -6.16	.06 -2.53	.00	.87 -4.35	.01 62	.38 -20.31	1.51 .00
	-37.97	LOSS			.00 -3.79					
DEC	.00 -67.83	GAIN LOSS	1.07	.00 -13.13	.00 -5.86	.00	.00 -14.10	.00 -1.44	.00 -48.13	.00
TOT	183. -337.	GAIN LOSS	24.	12. -80.	2. -35.	0. 0.	29. -66.	1. -9.	14. -282.	75. O.
MAX MAX	HEATING COOLING	LOAD=	= -23 = 24	33058. 11835.	BTUH ON BTUH ON	DEC 18 JUL 28	HOUR 7	AMI	BIENT TE BIENT TE	MP -1. MP 90.

ZONE UA BTU/HR-F 1218.1

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 BASERUN (FT L. WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI	URE F	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	77.	68.	4 27	19 7		1.72	7.84	1.95	13.51
FEB	70.	77.	69.	25 2	19 7		1.57	7.15	1.76	12.30
MAR	70.	78.	69.	10 4	19 6		1.74	7.93	1.95	13.64
APR	72.	78.	69.	29 9	19 6		1.69	7.70	1.89	13.23
MAY	73.	78.	69.	26 3			1.72	7.84	1.95	13.51
JUN	75.	78.	69.	30 10	19		1.69	7.70	1.89	13.23
JUL	76.	79.	69.	15 24	18		1.74	7.93	1.95	13.64
AUG	76.	78.		11 25	19		1.72	7.84	1.95	13.51
SEP	74.	78.		2	19		1.71	7.79	1.89	13.36
OCT	72.	78.	68.	14 24			1.72	7.84	1.95	13.51
NOV	70.	78.		17 8			1.67	7.61	1.89	13.11
DEC	70.	78.		23 18			1.76	8.02	1.95	13.76
YEAR							20.42	93.20	22.97	160.31

639A.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 BASERUN (FT L. WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF H	OURS WHEN	MAXIMUM BTU	
MONTH	HEATING	ECONOMIZER	HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	705 612 614 432 282 74 36 44 180 438 564 698	6 21 58 143 255 383 517 477 312 136 57	000000000000000000000000000000000000000	000000000000000000000000000000000000000	2159E+06 1829E+06 1812E+06 1182E+05 8522E+05 3120E+05 2731E+05 4116E+05 8061E+05 1103E+06 1575E+06 2331E+06	.0000
YEAR	4679	2383	U	3	. 20011	

SYSTEM TOTALS

монтн	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	106.87	.00	1.72	7.84	.57	13.51	12.4
FEB	88.49	.00	1.57	7.15	.52	12.30	12.4
MAR	79.97	.12	1.74	7.93	.57	13.64	24.3
APR	45.56	.69	1.69	7.70	.55	13.23	25.0
MAY	23.78	1.64	1.72	7.84	.57	13.51	27.0
JUN	5.82	3.48	1.69	7.70	.55	13.23	30.1
JUL	2.83	4.79	1.74	7.93	.57	13.64	31.1
AUG	3.47	4.37	1.72	7.84	.57	13.51	30.2
SEP	16.30	2.42	1.71	7.79	.55	13.36	29.8
OCT	44.14	.56	1.72	7.84	.57	13.51	24.4
NOV	68.01	.08	1.67	7.61	.55	13.11	18.3
DEC	105.29	.00	1.76	8.02	.57	13.76	12.4
YEAR	590.53	18.15	20.42	93.20	6.73	160.31	31.1

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 226210. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 BASERUN (FT L. WOOD, MO)

OTHER MONTHLY STATISTICS

				0						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	ο.	0	0	.0000	2159E+06
FEB	1421.	901.	1.000	37.	0.	ο.	0	0	.0000	1829E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.1274E+06	1812E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1378E+06	1182E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.1703E+06	8522E+05
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2227E+06	3120E+05
JUL	2470.	1954.	1.000	77.	0.	ο.	0	0	.2418E+06	2731E+05
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.2261E+06	4116E+05
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.2174E+06	8061E+05
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.1345E+06	1103E+06
NOV	1008.		1.000	47.	0.	0.	0	0	.8933E+05	1575E+06
DEC			1.000	35.	0.	ο.	0	0	.0000	2331E+06

```
BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 NIGHT SETBACK (FT L. WOOD
 ----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
 ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
                                                                        1.375000
 WEEKEND INTERNAL GAINS FACTOR (WKEND)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
                                                                         1
 NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                        YEAR 1955
 STATION 13995
                                            37.750000
 SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.00000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 34650.820000
 FLOOR AREA (SQFT) 3706.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 325000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -245500.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 37060.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 358.000000
 INFILTRATION PROFILE
                                                                                                                 .930
                                                .930 .930 .930 .930
                                  .930
                .930
  .930
          .930 .930 .930 .930 .930
                                                                                                                  .930
  .930
                                                                                                                .930
  1.00 1.00 1.00 1.00 .930 .930
                                                                                               .930
 A FACTOR IN INFILTRATION EQUATION (CINA) 6.200000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 9170.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 158.900000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 67.000000
WINDOW GLASS NUMBER (NG) 30
 WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
                                                     WALL DATA
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 207.0 542.0 851.0 994.0
WINDOW AREA SQFT (AWND) .0 .0 .0 107.0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) .0 .0 .0 10.7
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
MAX SOLAR WITH NO SHADE(SOLMX) 120.0 120.0 120.0
```

U VALUE BTU/(HR-SQFT-F) (UW)					
	.245	.245	.245	.245	
WALL TRANSFER FUNCTIONS	01037	01027	01937	01837	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.01837	.01037	.01037	.01037	
NUMBER OF BN FACTORS (NB	5	5	5	3	
BN FACTORS BN (BN)			00003	00003	
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00283	.00283	.00283	
N-3	.01017	.01017	.01017	.01017	
N-4	.00498	.00498	.00498	.00498	
N=4	00037	.00037	.00037	.00037	
N=5	.00057	******	*****	*****	
N=6		E	5	5	
NUMBER OF DN FACTORS (ND)	5)	J	J	
DN FACTORS			1 00000	1 00000	
N=1	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N-A	07415	07415	07415	07415	
N=4	.00212	.00212	.00212	.00212	
DN FACTORS N=1 N=2 N=3 N=4 N=5	******	*****	*****	*****	
N=6 ROOF AREA SQFT (AROF) 401	1 000000				
ROOF AREA SQFT (AROF) 401.	1.000000	0000E-01			
ROOF AREA SQFT (AROF) 401. ROOF U VALUE BTU/HR-SQFT-F (UI ROOF TRANS FUNCTIONS USED (1=) ROOF C TRANSFER FUNCTION (CNR ROOF B TRANSFER FUNCTIONS (BN)	RF) 1.12	10000E-01	•		
ROOF TRANS FUNCTIONS USED (1=)	YES, O=NO)	(IROOF)	7		
ROOF C TRANSFER FUNCTION (CNR) 5.4295	66E-02			
ROOF B TRANSFER FUNCTIONS (BN)	R)				
.304E-02 .314E-01 .190E-01	.852E-03	.122E+04	.122E+04		
DOOR D TRANSFER FUNCTIONS (DN)	R)				
1.00600 .822E-01	- 300E-03	999.	999.		
SKYLIGHT TILT DEGREES (TILT)	0,00000	NE+UU			
SKYLIGHT TILT DEGREES (TILI)	C (37CV)	2000 000	000		
SKYLIGHT AZIMUTH ANGLE DEGREE	S (MESK)	9999.000	000		
EVVITOUT UPICHT FT (SKH) 0	.000000E+00)			
SKYLIGHT HEIGHT FT (SKH) 0	.000000E+00)			
SKYLIGHT HEIGHT FT (SKH) 0.5 SKYLIGHT WIDTH FT (SKW) 0.5 SKYLIGHT OVERHANG WIDTH FT (SKH)	.000000E+00 kow) 0.0	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.5 SKYLIGHT OVERHANG WIDTH FT (SCOVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000			
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00		
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00		
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00	1	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00	1 1	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00	1	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00	1	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00	1	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0. SKYLIGHT OVERHANG WIDTH FT (S OVERHANG HEIGHT ABOVE SKYLIGH	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH)	000000E+00 0.0000	00E+00	1	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.5 SKYLIGHT OVERHANG WIDTH FT (ST OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) (R SHSK (MND,N 0.000000E- HR-F (SKYU) T-HR-F (SKYU)	000000E+00 0.0000	00E+00	1 1 DE-01	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.00000E-0 HR-F (SKYU) T-HR-F (SKYU)	000000E+00 0.0000 0.00000E+0 0,NDST) WDND) +00 1.	000E+00 0 1 1 292998 1.292998 6.100000	1 1 DE-01	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.00000E-0 HR-F (SKYU) T-HR-F (SKYU)	000000E+00 0.0000 0.00000E+0 0,NDST) WDND) +00 1.	000E+00 0 1 1 292998 1.292998 6.100000	1 1 0E-01 90.0	
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.5 SKYLIGHT OVERHANG WIDTH FT (ST OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.00000E-0 HR-F (SKYU) T-HR-F (SKYU)	000000E+00 0.0000 0.00000E+0 0,NDST) WDND) +00 1.	000E+00 0 1 1 292998 1.292998 6.100000	90.0	90.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) 1 (SHSK) 0 R SHSK (MST SHSK (MND, N 0.000000E- HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) OFILE 90.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.0000000E+0 0.000000000 0.0000000000	000E+00 0 1 1 292998 1.292998 6.100000	90.0	90.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.00000E-0 HR-F (SKYU) T-HR-F (SKYU)	000000E+00 0.0000 0.00000E+0 0,NDST) WDND) +00 1.	000E+00 0 1 1 292998 1.292998 6.100000	1 DE-01 90.0 76.0	90.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.5 SKYLIGHT OVERHANG WIDTH FT (SCOVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.000000E+00 HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) 90.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.005T) UDND) +00 1.00 (UN) ACE (FAP) 90.0	000E+00 0 1 1 292998 1.292998 6.100000 90.0 76.0	90.0 76.0	90.0 76.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (SI OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) 1 (SHSK) 0 R SHSK (MST SHSK (MND, N 0.000000E- HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) OFILE 90.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.0000000E+0 0.000000000 0.0000000000	000E+00 0 1 1 292998 1.292998 6.100000	90.0	90.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT— NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.000000E-1 HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) 90.0 90.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.005T) UDND) +00 1.00 (UN) ACE (FAP) 90.0	000E+00 0 1 1 292998 1.292998 6.100000 90.0 76.0	90.0 76.0	90.0 76.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0	.000000E+00 .000000E+00 .000000E+00 .000 .0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.005T) WDND) +00 1. (UN) ACE (FAP) 90.0 90.0	000E+00 1 1 292998 1.292998 6.100000 90.0 76.0 90.0	90.0 76.0 90.0	90.0 76.0 90.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGH SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.000000E-1 HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) 90.0 90.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.005T) UDND) +00 1.00 (UN) ACE (FAP) 90.0	000E+00 0 1 1 292998 1.292998 6.100000 90.0 76.0	90.0 76.0	90.0 76.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0	.000000E+00 .000000E+00 .000000E+00 .000 .0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.005T) WDND) +00 1. (UN) ACE (FAP) 90.0 90.0	000E+00 1 1 292998 1.292998 6.100000 90.0 76.0 90.0	90.0 76.0 90.0 55.0	90.0 76.0 90.0 55.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0 WEEKEND HEATING THERMOSTAT PR 55.0 55.0 55.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.000000E-1 HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) OFILE 90.0 90.0 90.0 60FILE 55.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.000000E+0 0.00000 1.00000 90.0 90.0 90.0	000E+00 1 1 292998 1.292998 6.100000 90.0 76.0 90.0	90.0 76.0 90.0	90.0 76.0 90.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGH SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0	.000000E+00 .000000E+00 .000000E+00 .000 .0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.005T) WDND) +00 1. (UN) ACE (FAP) 90.0 90.0	000E+00 1 1 292998 1.292998 6.100000 90.0 76.0 90.0	90.0 76.0 90.0 55.0	90.0 76.0 90.0 55.0
SKYLIGHT HEIGHT FT (SKH) 0 SKYLIGHT WIDTH FT (SKW) 0.4 SKYLIGHT OVERHANG WIDTH FT (S. OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I WEEKEND COOLING THERMOSTAT PR 90.0 90.0 90.0 90.0 90.0 90.0 76.0 76.0 76.0 WEEKEND HEATING THERMOSTAT PR 55.0 55.0 55.0	.000000E+00 000000E+00 KOW) 0.0 T FT (SKOH) (SHSK) 0 R SHSK (MND,NO 0.000000E-1 HR-F (SKYU) T-HR-F (SKYU) T-HR-F (SKYU) OFILE 90.0 90.0 90.0 60FILE 55.0	000000E+00 0.00000 0.00000E+0 0.000000E+0 0.000000E+0 0.00000 1.00000 90.0 90.0 90.0	000E+00 1 1 292998 1.292998 6.100000 90.0 76.0 90.0	90.0 76.0 90.0 55.0	90.0 76.0 90.0 55.0

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

KW ---- BTU/HR ---- POINT DEG F

POINT DEG F

POINT DEG F

PEOPLE PEOPLE

LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

PEAK VAL 8. 43435. 8620. 9820.

```
- - - HOURLY FRACTION OF PEAK - - - -
  HOUR
                                                          55.0
55.0
                                                                         90.0
                                    .000 .000
            .100 .012
   1
                                    .000
                                                                         90.0
                                               .000
             .100
                         .012
   2
                                                                         90.0
                                                           55.0
                                    .000
                                               .000
             .100
                         .012
   3
                      55.0
55.0
                                                                         90.0
                                               .000
             .100
.100
                         .012
                                    .000
                                                                         90.0
   5
                                                                         90.0
                                                            55.0
             .100
   6
                                                           55.0
                                                                         90.0
             .100
   7
                                                           55.0
                                                                         90.0
             .100
   8
                                                                         90.0
             .100
                                                           55.0
   9
                                                                         90.0
                                                           55.0
             .100
  10
                                                                         90.0
                                                           55.0
             .100
  11
                                                                         90.0
                                                            55.0
             .100
.100
  12
                                                                         90.0
                                                             55.0
  13
             .100
                                                                         90.0
                                                            55.0
  14
                                                           55.0
                                                                         90.0
             .100
.100
  15
                                                           55.0
                                                                         90.0
  16
                                                         55.0
70.0
70.0
70.0
55.0
55.0
                                                                         90.0
             1.000
  17
                                                                         76.0
             1.000
  18
                                                                         76.0
  19
            1.000
                                                                         76.0
  20
             1.000
                                                                         90.0
            .100
  21
                                                                         90.0
  22
              .100
                                                                         90.0
              .100
  23
                                                            55.0
                                                                         90.0
              .100
  24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 60.000000
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00 SYSTEM SUPPLY AIR STOP TIME HR 24.000000 SYSTEM MIXED AIR TEMP(TMXAIR) 58.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 6.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 330000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 412500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                 .286 .300 .369
                                                                  .400
                                                                              .451
                   .200
           .191
 .100
                                                       .718
                                                                   .800
                                                                              .812
                                  .625
                                             .700
                       .600
 .500
            .537
                      1.00
                                  1.00
           .906
 .900
CHILLER TYPE (ITYPCH)
                                  3
COOLING PLANT RATED OUTPUT BTU (CFLOT) 245500.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 64704.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                           .000 ` .000
                                                                    .000
                                                                               .000
            .000
                      .000
                                 .000
 .000
                     .000 .000 .000 .000
                                                                               .000
            .000
 .000
       .000 .000
                                  .000
 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-2.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 NIGHT SETBACK (FT L. WOOD

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITI DOOR				VENT	
			THRU		AND				AND	TAMBUM
MNTH	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW	INFL	
JAN	.00	GAIN	1.31	.03	.01	.00	.13	.00	.07	.00
	-39.83	LOSS		-9.27	-3.99	.00	-8.50	99 -	-32.21	.00
					0.1	00	25	00	04	.00
			1.78	.08	.01	.00	.35	- 83 -	.04 -27.19	.00
	-30.20	LOSS		-7.50	-3.32	.00	-5.92	63	-21.19	•00
	0.0		2 27	25	04	00	1.22	01	.27	.15
			2.21	6 60	.04 -2.99	.00	-4 23	75 -	-24.73	.00
	-22.24	LOSS		-6.62	-2.55	.00	4.25	.,5	241.0	• • • • • • • • • • • • • • • • • • • •
3 DD	4.94	CATN	2 40	91	.09	.00	2.54	.02	.66	.53
APR	-6.91		2.40	-3.99	-1.71		-1.68	43 -	-14.38	.00
	-0.91	TOSS		3.,,						
MAY	11.12	GAIN	2.64	1.35	.15	.00	3.81	.04	1.01	
1411	66				-1.17	.00	57	28	-9.11	.00
JUN	20.84	GAIN	2.76	1.56	.14		4.42	.04	.95	7.03
	.00			-2.20	85	.00	23	21	-5.74	.00
										0 71
JUL	27.45	GAIN	2.78	2.05	.26	.00	5.11	.06	1.73 -4.82	9.71
	.00	LOSS		-2.07	69	.00	17	17	-4.82	.00
						00	4 22	05	1.45	0 10
AUG			2.48				4.22	.05	-4.70	0.10
	.00	LOSS		-2.12	71	.00	21	17	-4.70	•00
	12 22	CATN	2 06	1 12	21	00	2.87	. 05	1.47	4.63
SEP	13.73 86		2.00	7.12	99	.00	65	24	-8.36	.00
	00	TOSS		2.03	• • • • •					
OCT	3.68	CATN	1.65	.50	.12	.00	1.39	.03	.85	.78
001	-5.09		2.00	-4.12	-1.51		-1.83	37	-12.43	.00
	3.03	2000								
NOV	.60	GAIN	1.20	.18	.06	.00	.49	.02	.45	.09
	-16.73			-5.86	-2.34	.00	-4.21	 57 ·	-18.76	.00
DEC	.00	GAIN	1.07	.03	.02 -3.90	.00	.07	.00	.11	.00
	-38.88	LOSS		-9.20	-3.90	.00	-8.61	96 ·	-31.28	.00
						_		_	_	22
TOT	107.	GAIN	24.	10.	1.	0.	27.	o.	9. -194.	33.
	-161.	LOSS		-59.	-24.	0.	-37.	-6.	-194.	υ.
				0127 .	nmrrr	TAN 20	HOUD 14	ZMD	ተም <u>ለ</u> ጥ ጥኮሌ	IP 18.
MAX	HEATING	TOYD=	-21	EEUU ;	DIUD ON	MIIC 29	HOUR 19	AMR.	IENT TEM	
MAX	COOLING	TOWD=		5500. I	DION ON	AUG ZO	"1001/ TO			

ZONE UA BTU/HR-F 1218.1

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-2.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 NIGHT SETBACK (FT L. WOOD

NOOD									FAN	TOTAL
INTERNA	INTE	RNAL S PERATI MAX	URE F	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	58.	77.	54.	4 27	19 7		1.72	7.84	1.95	13.51
FEB	59.	79.	54.	25 2	20 7		1.57	7.15	1.76	12.30
MAR	60.	90.	54.	28 4	17 6		1.74	7.93	1.95	13.64
APR	66.	91.	54.	30 9	17 6		1.69	7.70	1.89	13.23
MAY	72.	91.	55.	29 11	17 5		1.72	7.84	1.95	13.51
JUN	77.	91.	60.	29 17	17 6		1.69	7.70	1.89	13.23
JUL	80.	91.	62.	26 10	17 6		1.74	7.93	1.95	13.64
AUG	79.	91.	58.	29 25	17 7		1.72	7.84	1.95	13.51
SEP	73.	91.	55.	10 15	17 6		1.71	7.79	1.89	13.36
OCT	65.	91.	54.	4 28			1.72	7.84	1.95	13.51
NOV	61.	85.	54.	8			1.67	7.61	1.89	13.11
DEC	58.	81.	54.	23 18			1.76	8.02	1.95	13.76
YEAR							20.42	93.20	22.97	160.31

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-2.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 NIGHT SETBACK (FT L. WOOD

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING		HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING C	COOLING	HEATING	COOLING
JAN	602	5	0	•	2101E+06	.0000
FEB	510	19	0	0	1730E+06	.0000
MAR	454	33	0	0	1850E+06	.1440E+06
APR	213	80	0	0	1234E+06	.1865E+06
MAY	32	132	Ō	0	4238E+05	.2119E+06
JUN	0	167	Ŏ	2	.0000	.2455E+06
JUL	Ö	224	Ö	11	.0000	.2455E+06
	Ö	192	Ŏ	4	.0000	.2455E+06
AUG	50	141	ŏ	-	3762E+05	.2316E+06
SEP		78	ŏ	-	9190E+05	.2013E+06
OCT	203		Ö	_	1343E+06	.1286E+06
NOV	374	45		_	1781E+06	.0000
DEC	623	15	0	-		.2455E+06
YEAR	3061	1131	0	17	2101E+06	. 2435ETU0

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-2.I

SYSTEM TOTALS

монтн	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	71.62	.00	1.72	7.84	.57	13.51	12.4
FEB	57.56	.00	1.57	7.15	.52	12.30	12.4
MAR	46.65	.09	1.74	7.93	.57	13.64	24.6
APR	19.00	.48	1.69	7.70	.55	13.23	25.0
MAY	2.56	1.06	1.72	7.84	.57	13.51	27.0
JUN	.00	1.91	1.69	7.70	.55	13.23	30.0
JUL	.00	2.49	1.74	7.93	.57	13.64	30.9
AUG	.00	2.18	1.72	7.84	.57	13.51	30.1
SEP	3.94	1.26	1.71	7.79	.55	13.36	29.6
OCT	16.84	.36	1.72	7.84	.57	13.51	25.7
NOV	36.64	.06	1.67	7.61	.55	13.11	21.2
DEC	71.89	.00	1.76	8.02	.57	13.76	12.4
YEAR	326.71	9.89	20.42	93.20	6.73	160.31	30.9

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 147414. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-2.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 NIGHT SETBACK (FT L. WOOD

OTHER MONTHLY STATISTICS

CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF	DEG.	TEMP.	DRIFT	SYSTEM	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
1010.	655.	1.000	35.	0.	0.	0	0	.0000	2101E+06
1421.	901.	1.000	37.	0.	0.	0	0	.0000	1730E+06
1864.	1216.	1.000	43.	0.	0.	0	0	.1440E+06	1850E+06
2242.	1552.	1.000	55.	0.	0.	0	0	.1865E+06	1234E+06
2489.	1771.	1.000	65.	0.	0.	0	0	.2119E+06	4238E+05
2567.	1933.	1.000	72.	ο.	0.	2	0	.2455E+06	.0000
2470.	1954.	1.000	77.	0.	0.	11	0	.2455E+06	.0000
2211.	1784.	1.000	76.	0.	0.	4	0	.2455E+06	.0000
1800.	1330.	1.000	68.	0.	0.	0	0	.2316E+06	3762E+05
1394.	924.	1.000	57.	0.	0.	0	0	.2013E+06	9190E+05
1008.	710.	1.000	47.	0.	0.	0	0	.1286E+06	1343E+06
856.	586.	1.000	35.	0.	0.	0	0	.0000	1781E+06
	DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY 1010. 1421. 1864. 2242. 2489. 2567. 2470. 2211. 1800. 1394. 1008.	DAY ACTUAL SOLAR INSOL. INSOL. INSOL. INSOL. HORIZ. SURF. BTU/ SQFT- DAY 1010. 655. 1421. 901. 1864. 1216. 2242. 1552. 2489. 1771. 2567. 1933. 2470. 1954. 1800. 1330. 1394. 924. 1008. 710.	DAY ACTUAL SOLAR SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. BTU/ BTU/ SQFT- PF DAY DAY FACTOR 1010. 655. 1.000 1421. 901. 1.000 1864. 1216. 1.000 2242. 1552. 1.000 2489. 1771. 1.000 2567. 1933. 1.000 2470. 1954. 1.000 2211. 1784. 1.000 1800. 1330. 1.000 1394. 924. 1.000 1008. 710. 1.000	DAY ACTUAL SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. SURF. BTU/ BTU/ SQFT- PF DEG. FACTOR F 1010. 655. 1.000 35. 1421. 901. 1.000 37. 1864. 1216. 1.000 43. 2242. 1552. 1.000 55. 2489. 1771. 1.000 65. 2567. 1933. 1.000 72. 2470. 1954. 1.000 77. 2211. 1784. 1.000 76. 1800. 1330. 1.000 68. 1394. 924. 1.000 57. 1008. 710. 1.000 47.	DAY ACTUAL SOLAR INSOL. INSOL. INSOL. INSOL. HORIZ. HORIZ. SURF. SURF. BTU/ BTU/ AMBT. TEMP. PF DEG. DEG. HOAY DAY FACTOR F + 1010. 655. 1.000 35. 0. 1421. 901. 1.000 37. 0. 1864. 1216. 1.000 43. 0. 2242. 1552. 1.000 55. 0. 2489. 1771. 1.000 65. 0. 2567. 1933. 1.000 72. 0. 2270. 1954. 1.000 77. 0. 2211. 1784. 1.000 76. 0. 1800. 1330. 1.000 68. 0. 1394. 924. 1.000 57. 0. 1008. 710. 1.000 47. 0.	DAY ACTUAL SOLAR SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. SURF. BTU/ BTU/ AMBT. TEMP. DRIFT PF DEG. PF DEG. F H DAY DAY FACTOR F + - 1010. 655. 1.000 35. 0. 0. 1421. 901. 1.000 37. 0. 0. 1864. 1216. 1.000 43. 0. 0. 2242. 1552. 1.000 55. 0. 0. 2489. 1771. 1.000 65. 0. 0. 2567. 1933. 1.000 72. 0. 0. 22470. 1954. 1.000 77. 0. 0. 2211. 1784. 1.000 76. 0. 0. 1800. 1330. 1.000 68. 0. 0. 1394. 924. 1.000 57. 0. 0. 1008. 710. 1.000 47. 0. 0.	DAY ACTUAL SOLAR INSOL. INSOL. HORIZ. SURF. SURF. SURF. BTU/ BTU/ SOFT- DAY DAY FACTOR F TOOL TOOL TOOL TOOL TOOL TOOL TOOL TO	DAY ACTUAL SOLAR INSOL. INSOL. INSOL. INSOL. INSOL. INSOL. INSOL. SURF. SURF. SURF. BTU/ BTU/ SQFT- SQFT- PF DEG. DEG. F COOL HEAT HOURS WHEN DAY DAY FACTOR F + - TOOL HEAT HOURS WHEN DEG. F COOL HEAT HOURS WHEN DEG. F COOL HEAT HOURS WHEN SYSTEM LOADS NOT MET COOL HEAT HOURS WITH AND SAME HOURS NOT MET COOL HEAT HOURS WITH AND SAME HOURS NOT MET COOL HEAT HOURS WITH AND SAME HOURS NOT MET COOL HEAT HOURS	DAY SOLAR SOLAR INSOL. HORIZ. SURF. BTU/ BTU/ BTU/ DAY DAY FACTOR F + - HOURS SYSTEM LOADS BTU DAY DAY FACTOR F + - HOURS SYSTEM LOADS BTU DAY DAY FACTOR F + - HOURS SYSTEM LOADS BTU DEG. F COOL HEAT DEG. BTU DEG. F COOL HEAT BTU DEG. DEG. F COOL HEAT BTU DEG. DEG. F COOL HEAT BTU DEG. DEG. F COOL HEAT BTU DEG. DEG. F COOL HEAT BTU DEG. DEG. F COOL HEAT BTU DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. TO COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. F COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. TE COOL HEAT DEG. DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. DEG. DEG. TE COOL HEAT DEG. DEG. DEG. DEG. DEG. DEG. DEG. DEG.

MAX SOLAR WITH NO SHADE (SOLMX)	120.0	120.0	120.0	120.0	
tt WALTE BTIL/(HR-SOFT-F) (UW)	.245	.245	.245	.243	
WALL TRANSFER FUNCTIONS				01037	
CN FACTORS	.01837	.01837	.01837	.01837	
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN)		00000	00003	00003	
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00283	01017	01017	
N=3	.01017	.01017	.01017	00498	
N=4	.00498	.00498	000478	00037	
N=5	.00037	.00037	******	******	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	****	****	5	5	
NUMBER OF DN FACTORS (ND)	5	3	5	J	
	1 00000	1 00000	1.00000	1.00000	
N=1	1.00000	_1 50000	-1 50943	-1.50943	
N=2	-1.50943	65654	65654	.65654	
N=3	07415	- 07415	07415	07415	
N=4	07413	00212	.00212	.00212	
N=5	.00212	******	******	*****	
(2202) 4011	$\Delta\Delta\Delta\Delta\Delta\Delta\Delta\Delta$				
ROOF AREA SQFT (AROF) 4011 ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)		00008-01			
ROOF U VALUE BTU/HR-SQFT-F (UF	(F) 1.12	(TROOF)	1		
ROOF TRANS FUNCTIONS USED (1=1	ES, U-NO)	(IROOF)	•		
ROOF C TRANSFER FUNCTION (CNK)) 3.4 293	006 02			
ROOF B TRANSFER FUNCTIONS (BNF .304E-02 .314E-01 .190E-01	0E2E-U3	1228+04	.122E+04		
ROOF D TRANSFER FUNCTIONS (DNF	.652E-05	. 1221,04			
1.00600 .822E-01	- 300E-03	999.	999.		
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00			
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000		
SKYLIGHT HEIGHT FT (SKH) 0.	OCCOCCE+OC)			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00	•			
SKYLIGHT OVERHANG WIDTH FT (SE	(W) 0.0	00000E+00			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
\\\\\\\\\\	7				
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SUMMER END AND AND AND AND AND AND AND AND AND A	(SHSK) C	.00000E+0	0		
SKILIGHT SHADING CONTINUES OF	SHSK (MST	NDST)	1	1	L
SUMMED END MONTH AND DAY FOR S	SHSK (MND.N	IDND)	1		
SKY LIGHT AREA SOFT (ASKY)	0.000000E+	-00 [°]			
DAYTIME SKY LIGHT U BTU/SOFT-E	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT	r-HR-È (SKÝ	(UN)	1.292998		
SUMMER END MONTH AND DAT FOR ESTATE OF THE SKY LIGHT U BTU/SQFT-HIGHT TIME SKYLIGHT U BTU/SQFT-FRACTION OF PROCESS HEAT TO IN	NTERNAL SPA	ACE (FAP)	6.100000)E-01	
WEEKEND COOLING THERMOSTAT PRO	DFILE				
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	90.0	90.0	78.0	78.0	78.0
78.0 78.0 78.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT PRO	OFILE				
55.0 55.0 55.0			55.0	55.0	
	55.0	55.0	33.0	55.0	55.0
	55.0				
55.0 55.0 55.0	55.0 55.0	55.0	68.0	68.0	68.0
55.0 55.0 55.0	55.0	55.0	68.0	68.0	68.0
55.0 55.0 55.0 68.0 68.0 68.0					

	INTERNA	AL GAINS AND	PROFILES	
	20.12			THERMOSTAT SET
				POINT DEG F
KW		BTU/HR		

PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
EAK VAL 8. 43435. 8620. 9820. HOUR ---- HOURLY FRACTION OF PEAK ----
PEAK VAL
 SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 6000.000000
 ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 58.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01

FAN TOTAL PRESSURE IN. WATER (DP) 6.00000E-01

HEATING PLANT RATED OUTPUT BTU (HFLOT) 330000.000000

HEATING PLANT RATED INPUT BTU (HFLIN) 412500.000000
 HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
  .100 .191 .200 .286 .300 .369
                                                                    .400
                                                                                 .451
                                                                     .800
                                              .700 .718
                                                                                 .812
                       .600
                                   .625
  .500
             .537
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 3
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 245500.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 64704.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
            .000 .000 .000 .000 .000 .000 .000
  .000 .000 .000 .000 .000
                                                                                 .000
  .000 .000 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-1.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 DDC (FT L. WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITN DOOR AND				VENT AND	
	LOAD		THRU	POOF	ST.AR	BSMT	WALL	WINDOW		LATENT
MNTH	TOAD	CATM	1 31	.03	.01	.00	.13	.00	.07 _31 83	.00
JAN	-39.14	LOSS	1.51	-9 19	-3.95	.00	-8.38	98	-31.83	.00
	-39.14									
mmn	.00	GAIN	1 78	. 08	- 01	.00	.35	.00	.04	.00
		LOSS	1.70	-7.45	-3.30	.00	-5.85	82	-26.77	.00
	-29.03	LOSS		,						
MAD	70	CATN	2.27	. 36	.04	.00	1.21	.01	.28	. 09
	-21.79			-6.61	-2.99		-4.20	74	-24.43	.00
	-21.79	FOSS		0.01						
A DD	4.49	GAIN	2.40	.90	.09	.00	2.48	.02	.66	.53
APK	-6.74		2.40	-4.06	-1.75	.00	-1.72	44	-14.42	.00
	-0.74	POSS								
MAV	10.40	GATN	2.64	1.32	.14	.00	3.68	.04	.96	1.97
MAI	66			-2.96	-1.23	.00	64	30	-9.35	•00
	00	ПООО								
JUN	20.07	GATN	2.76	1.52	.13	.00	4.27	.03	.87	7.16
JUN	.00		2.,0	-2.30	91		27	22	-6.13	.00
	.00	TOSS		2.50	• • •					
7777	26.67	CATN	2.78	1.99	.23	.00	4.96	.06	1.53	9.75
301		LOSS		-2.15		.00	_		-5.03	.00
	.00	TOSS		2.10	• • •					
AUG	23.26	CATN	2.48	1.67	. 19	.00	4.07	.05	1.28	8.29
AUG	.00		2.40	-2.21		.00	24	18	-4.98	.00
	.00	TOSS		2.21	• • •					
CED	13.14	CATN	2.06	1.09	.20	.00	2.76	.05	1.38	4.71
SEP	84		2.00	-2.93	-1.04	.00	72	26	-8.51	.00
	04	БОВО								
OCT	3.28	CATN	1.65	.50	.12	.00	1.35	.03	.85	.70
OCI	-4.99		1.00	-4.21	-1.56	.00	-1.92	38	-12.39	.00
	-4.55	БОВВ								
NOV	.53	CATN	1.20	.18	.06	.00	.48	.02	.45	.09
	-16.31				-2.34		-4.20	57	-18.41	.00
	-10.31	HODD		3.0.						
חשכ	00	CAIN	1.07	.03	.02	.00	.07	.00	.11	.00
DEC	-38.17		1.07	-9.12	-3.86		-8.51	95	-30.78	.00
mom.	103	CATN	24.	10.	1.	0.	26.	0.	8. -193.	33.
101	_160	TOSS	24.	-59	-24.	Ō.	-37.	-6.	-193.	0.
	-130.	TOSS		٠,٠		- •	•			
MAV	HEATING	= CAO.1	-19	5567. 1	BTUH ON	JAN 28	HOUR 14	AME	SIENT TEN	MP 18.
MAY	COOL ING	T.OAD=	24	5500.	BTUH ON	JUL 31	HOUR 18	AME	BIENT TEN	IP 88.
MMX	COULTING	HOAD-	27			-				

ZONE UA BTU/HR-F 1218.1

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-1.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 DDC (FT L. WOOD, MO)

									FAN	TOTAL
INTERNA			-		~	OTN	LIGHTING	PROCESS	HEAT	HEAT GAIN
			SPACE URE F		-	OIN- CIDENT	THOUSAND	MILLION	MILLION	MILLION
MONTH			MIN	DAY		AMBT.	KWH	BTU	BTU	BTU
MONIN	AVG.	rina	11211	<i>D</i>						
JAN	58.	79.		4	19	58.	1.72	7.84	1.95	13.51
			54.	27	7	4.				
							1 57	7.15	1.76	12.30
FEB	59.	80.	- 4	25	20		1.57	7.15	1.70	12100
			54.	2	7	14.				
W2.D	60.	90.		28	17	75.	1.74	7.93	1.95	13.64
MAR	ю.	90.	54.	4	6					
			54.	•	•	•				
APR	66.	91.		30	17	83.	1.69	7.70	1.89	13.23
•••			54.	9	6	30.				
								- 0.	1 05	13.51
MAY	72.	91.		29	17		1.72	7.84	1.95	13.51
			55.	11	5	39.				
				00	17	86.	1.69	7.70	1.89	13.23
JUN	78.	91.	60.	29 17	6		1.09	7.70	2.05	
			60.	1,	O	57.				
JUL	80.	91.		26	17	93.	1.74	7.93	1.95	13.64
001		,,,,	62.	10	-6	60.				
							_		1 05	12 51
AUG	79.	91.		29	17		1.72	7.84	1.95	13.51
			58.	25	7	55.				
	- 4	0.1		10	17	86.	1.71	7.79	1.89	13.36
SEP	74.	91.	55.	15	6		1.71	, , , ,		
			٠,٠	13	·					
OCT	66.	91.		4	17	79.	1.72	7.84	1.95	13.51
			54.	28	6	33.				
								7 (1	1.89	13.11
NOV	61.	85.		8	17		1.67	7.61	1.09	13.11
			54.	3	7	18.				
250	E 0	83.		23	20	55.	1.76	8.02	1.95	13.76
DEC	58.	63.	54.	18	7		2.,0			
			24.		•					
YEAR							20.42	93.20	22.97	160.31

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-1.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 DDC (FT L. WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	.,0	HOURS WHEN E NOT MET COOLING	MAXIMUM BTU HEATING	
JAN	605	5	O	•	1956E+06	.0000
FEB	510	13	0	•	1585E+06	.0000
MAR	451	30	0	0	1705E+06	.1293E+06
APR	210	76	0	0	1089E+06	.1719E+06
MAY	32	131	0	0	4271E+05	.1974E+06
JUN	0	170	0	. 0	.0000	.2390E+06
JUL	Ö	226	0	6	.0000	.2455E+06
AUG	Ö	194	0	0	.0000	.2425E+06
SEP	49	140	0	0	3787E+05	.2171E+06
OCT	201	69	0	0	7742E+05	.1868E+06
NOV	369	34	0	0	1197E+06	.1140E+06
DEC	623	10	0	0	1780E+06	.0000
YEAR	3050	1098	Ō	6	1956E+06	.2455E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-1.I

SYSTEM TOTALS

		ENERG	Y CONSUMPT	TOTAL INTERNAL MAXIMUM				
	HEATING	COOLING	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND	
MONTH	MILLION BTU	THOUSAND KWH	KWH	BTU	KWH	BTU	KW	
JAN	71.10	.00	1.72	7.84	.57	13.51	12.4	
	57.10	.00	1.57	7.15	.52	12.30	12.4	
FEB	57.10	.00					24.2	
MAR	46.08	.07	1.74	7.93	.57	13.64	24.2	
APR	18.64	.44	1.69	7.70	.55	13.23	24.7	
MAY	2.56	1.01	1.72	7.84	.57	13.51	26.7	
JUN	.00	1.87	1.69	7.70	.55	13.23	29.6	
JUL	.00	2.45	1.74	7.93	.57	13.64	30.6	
AUG	.00	2.14	1.72	7.84	.57	13.51	29.8	
SEP	3.86	1.23	1.71	7.79	.55	13.36	29.2	
OCT	16.66	.33	1.72	7.84	.57	13.51	24.9	
NOV	35.95	.06	1.67	7.61	.55	13.11	20.2	
DEC	71.19	.00	1.76	8.02	.57	13.76	12.4	
YEAR	323.14	9.58	20.42	93.20	6.73	160.31	30.6	

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 146166. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-1.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 DDC (FT L. WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYSTEMP. DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1956E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	1585E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.1293E+06	1705E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1719E+06	1089E+06
MAY	2489.	1771.	1.000	65.	0.	٥.	0	0	.1974E+06	4271E+05
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.2390E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	٥.	6	0	.2455E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.2425E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	٥.	0	0	.2171E+06	3787E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.1868E+06	7742E+05
NOV	1008.	710.	1.000	47.	0.	ο.	0	0	.1140E+06	1197E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	1780E+06

```
BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 ECONOMIZER (FT L. WOOD,
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.375000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                   1
NUMBER OF ZONES (NZ)
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                  YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01
INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 34650.820000
FLOOR AREA (SQFT) 3706.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 325000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -245500.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 37060.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 358.000000
INFILTRATION PROFILE
                                                           .930 .930
                                                                                   .930
                       .930
                                   .930 .930
        .930
 .930
                                                           .930
                                                                       .930
                                                                                   .930
 .930 .930 .930
                                               .930
                                   .930
                                                           .930 .930
                                               .930
                                                                                  .930
                       1.00
                                    1.00
           1.00
 1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 6.200000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 9170.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 158.900000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 67.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

MAX SOLAR WITH NO SHADE (SOLMX)	120.0	120.0	120.0	120.0	
II WALLE BTH/(HR-SOFT-F) (UW)	.245	.245	. 243	.243	
WALL TRANSFER FUNCTIONS	01007	01027	01937	01837	
CN FACTORS	.01837	.01037	.01837	5	
NUMBER OF BN FACTORS (NB	5	5	3	J	
BN FACTORS BN (BN)	00003	00003	00003	.00003	
N=1	.00003	.00003	00283	.00283	
N=2	.00283	01017	01017	.01017	
N=3	.01017	00498	.00498	.00498	
N=4	00430	00037	-00037	.00037	
N=5	.00037	******	*****	*****	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5	
NUMBER OF DN FACTORS (ND)	3	•	•		
DN FACTORS	1 00000	1.00000	1.00000	1.00000	
N=1	-1.50943	-1.50943	-1.50943	-1.50943	
N=2	. 65654	.65654	.65654	.65654	
N=3	07415	07415	07415	07415	
N=4 N=5	.00212	.00212	.00212	.00212	
×- C	*****	*****	*****	*****	
ROOF AREA SQFT (AROF) 4011	.000000				
POOF II VALUE BTII/HR-SOFT-F (UF	(F) 1.12	0000E-01			
ROOF U VALUE BTU/HR-SQFT-F (UPROOF TRANS FUNCTIONS USED (1=)	(ES. 0=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	5.4295	66E-02			
.304E-02 .314E-01 .190E-01	.852E-03	.122E+04	.122E+04		
DOOR D PRINCERS FINCETONS IDNA	२ १				
1.00600 .822E-01	300E-03	999.	999.		
CVVITCUT TIT DECREES (TILT)	0.000000	医+00			
SKYLIGHT AZIMUTH ANGLE DEGREES	S (AZSK)	9999.000	000		
OVULTOUR UPTOUR PR (CYU) ()	. DDDDDDDDE+OU	l .			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00				
OVERHANG HEIGHT ABOVE SKYLIGHT	r ft (skoh)	0.0000	100E+00		
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR	(SHSK)	.000000E+0	00 1 1	1	
SUMMER START MONTH AND DAY FOR	R SHSK (MS1	(NDST)	1	1	
SUMMER END MONTH AND DAY FOR	THOUDOUT,	י מאמו ג' מאמו	-	•	
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-I NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO I	ישטטטטטטייט.	1	292998		
DAYTIME SKY LIGHT U BTU/SQFT-	L-AD-E (CKA UK-L (DVIO)		1.292998		
NIGHT TIME SKYLIGHT U BIU/SQF.	I-RR-F (SKI MTEDNAT SDA	CE (FAP)	6.100000	E-01	
WEEKEND COOLING THERMOSTAT PRO	JELLE JELLE				
90.0 90.0 90.0	20 U	90 0	90.0	90.0	90.0
90.0 90.0 90.0	90.0	50.0	50.0		
90.0 90.0 90.0	90.0	90.0	78.0	78.0	78.0
90.0 90.0 90.0	30.0				
78.0 78.0 78.0	90.0	90.0	90.0	90.0	90.0
78.0 78.0 78.0	,	,,,,,	•		
WEEKEND HEATING THERMOSTAT PRO	OFILE				
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
33.0 33.0 33.0					
55.0 55.0 55.0					
	55.0	55.0	68.0	68.0	68.0
	55.0	55.0			
68.0 68.0 68.0	55.0 55.0	55.0 55.0	68.0 55.0	68.0 55.0	68.0 55.0

INTERNAL	GAINS	AND	PROFILES		
				THERMOSTAT	SET
				POINT DEG F	1

KW ----- BTU/HR ----PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
9820.
           8. 43435.
                                  8620.
PEAK VAL
          - - - HOURLY FRACTION OF PEAK - - - -
 HOUR
         .100 .012 .000 .000
                                                        55.0
  1
                                                        55.0
                                                                    90.0
  2
                                                                     90.0
                                                                     90.0
   4
                                                                     90.0
   5
                                                                      90.0
   6
                                                                     90.0
   7
                                                                     90.0
   8
  Q
  10
                                                                     90.0
  11
                                                                      90.0
  12
                                                                      90.0
  13
                                                                      90.0
  14
                                                                     90.0
  15
                                                                     90.0
  16
                                                                     90.0
  17
                                                                     78.0
  18
                                                                     78.0
  19
                                                                     78.0
  20
                                                                     90.0
  21
                                                                     90.0
  22
                                                                     90.0
  23
                                                                     90.0
  24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 60.000000
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 6000.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 75.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 58.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 6.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 330000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 412500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                               AC OF INPUT TABLE (PLH)
.286 .300 .369 .400 .451
 .100
          .191
                      .200
                                .625
                                          .700 .718 .800 .812
                      .600
 .500
           .537
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 3
COOLING PLANT RATED OUTPUT BTU (CFLOT) 245500.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 64704.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                               .000
                                                                          .000
                              .000 .000
                                                  .000
                   .000
           .000
 .000 .000 .000 .000 .000
                                                               .000
                                                                          .000
                    .000
                               .000
 .000 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-3.I BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 ECONOMIZER (FT L. WOOD,

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

JAN	LOAD .00 -39.14	GAIN	SOLAR THRU WINDOW 1.31	ROOF	PARTITN DOOR AND SLAB .01 -3.95	BSMT	. 13	.00	.07	LATENT .00 .00
FEB		GAIN	1.78	.08	.01 -3.30	.00	.35 -5.85	.00 82 -	.04 -26.77	.00
	.54 -21.79		2.27	.36 -6.61	.04 -2.99	.00	1.21 -4.20	.01 74 -	.28 -24.79	.28 .00
	3.26 -6.74				.09 -1.75	.00	2.48 -1.72	.02 44	.66 -16.36	1.24 .00
MAY	9.03 66		2.64	1.32 -2.96	.14 -1.23	.00	3.68 64	.04 30	.96 -11.93	3.18 .00
JUN	21.45		2.76		.13 92	.00	4.26 28	.03 22	.87 -9.05	11.48 .00
JUL	26.99 .00	GAIN LOSS	2.78	1.99 -2.16	.23 73	.00	4.94 21	.06 18	1.53 -5.87	10.94 .00
AUG	23.61		2.48	1.67 -2.21	.19 75	.00	24	18	1.28 -5.71	.00
SEP	13.62 84	GAIN LOSS	2.06	1.09 -2.94	.20 -1.04	.00	2.75 72	26	-10.06	.00
OCT	2.78 -4.99		1.65	.50 -4.21	.12 -1.56	.00	-1.92	38	-13.93	.00
	-16.31	LOSS		-5.87	.06 -2.34	.00	.48 -4.20	57	-18.83	.00
	-38.17	LOSS		-9.12	.02 -3.86	.00	-8.51	95	-30.78	.00
TOT	101. -158.	GAIN LOSS	24.	10. -59.	1. -24.	o. o.	26. -37.	0. -6.	8. -206.	4 5. 0.
MAX MAX	HEATING COOLING	LOAD=	= -19 = 24	5567. I	BTUH ON S	JAN 28 SEP 23	HOUR 14 HOUR 19	AMB AMB	IENT TE	MP 18. MP 75.

ZONE UA BTU/HR-F 1218.1

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-3.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 ECONOMIZER (FT L. WOOD, M

									FAN	TOTAL
INTERNA MONTH	INTE:	RNAL : PERAT MAX		DAY		CIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	58.	79.	54.	4 27	19 7		1.72	7.84	1.95	13.51
FEB	59.	80.	54.	25 2	20 7		1.57	7.15	1.76	12.30
MAR	60.	90.	54.	28 4	17 6		1.74	7.93	1.95	13.64
APR	66.	91.	54.	30 9	17 6		1.69	7.70	1.89	13.23
MAY	72.	91.	55.	29 11	17 5		1.72	7.84	1.95	13.51
JUN	78.	91.	60.	29 17	17 6		1.69	7.70	1.89	13.23
JUL	81.	91.	62.	26 10	17 6		1.74	7.93	1.95	13.64
AUG	79.	91.	58.	29 25	17 7		1.72	7.84	1.95	13.51
SEP	74.	91.	55.	10 15	17 6		1.71	7.79	1.89	13.36
OCT	66.	91.	54.	4 28	17 6		1.72	7.84	1.95	13.51
NOV	61.	85.	54.	8			1.67	7.61	1.89	13.11
DEC	58.	83.	54.	23 18			1.76	8.02	1.95	13.76
YEAR							20.42	93.20	22.97	160.31

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-3.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 ECONOMIZER (FT L. WOOD, M

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING		HOURS WHEN E NOT MET	MAXIMUM LOADS BTU	
MONTH	HEATING	ECONOMIZER	HEATING C		HEATING	COOLING
JAN	605	5	0	•	1956E+06	.0000
FEB	510	13	0	0	1585E+06	.0000
MAR	451	30	0	0	1705E+06	.1540E+06
APR	210	76	Ö	0	1089E+06	.1719E+06
	32	131	Ö	Ō	4271E+05	.2173E+06
MAY	0	170	ŏ	5	.0000	.2455E+06
JUN	-		ŏ	11	.0000	.2455E+06
JUL	0	226	•	1	.0000	.2455E+06
AUG	0	194	0		3787E+05	.2455E+06
SEP	49	141	0	5		
OCT	201	69	0	0	7742E+05	.2041E+06
NOV	369	34	0	0	1197E+06	.5148E+05
DEC	623	10	0	0	1780E+06	.0000
YEAR	3050	1099	Ō	22	1956E+06	.2455E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-3.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	71.10	.00	1.72	7.84	.57	13.51	12.4
FEB	57.10	.00	1.57	7.15	.52	12.30	12.4
MAR	46.08	.05	1.74	7.93	.57	13.64	26.0
APR	18.64	.33	1.69	7.70	.55	13.23	25.6
MAY	2.56	.86	1.72	7.84	.57	13.51	29.8
JUN	.00	1.91	1.69	7.70	.55	13.23	31.3
JUL	.00	2.45	1.74	7.93	.57	13.64	31.3
AUG	.00	2.14	1.72	7.84	.57	13.51	29.8
SEP	3.86	1.22	1.71	7.79	.55	13.36	31.3
OCT	16.66	.26	1.72	7.84	.57	13.51	25.9
NOV	35.95	.01	1.67	7.61	.55	13.11	15.1
DEC	71.19	.00	1.76	8.02	.57	13.76	12.4
YEAR	323.14	9.24	20.42	93.20	6.73	160.31	31.3

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 145854. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-3.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 ECONOMIZER (FT L. WOOD,

OTHER MONTHLY STATISTICS

Monte	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. I DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1956E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	1585E+06
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.1540E+06	1705E+06
APR	2242.	1552.	1.000	55.	ο.	0.	0	0	.1719E+06	1089E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.2173E+06	4271E+05
JUN	2567.	1933.	1.000	72.	0.	ο.	5	0	.2455E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	ο.	11	0	.2455E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	1	0	.2455E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	0.	5	0	.2455E+06	3787E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.2041E+06	7742E+05
NOV	1008.	710.	1.000	47.	ο.	0.	0	0	.5148E+05	1197E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	1780E+06

```
BEACON Energy Analysis By Energy Systems Engineers, Inc.
 BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (NIGHTIME)
    PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 WEEKEND INTERNAL GAINS FACTOR (WKEND)

1.375000

LAST CASE FLAG (1=VFS O=NO) (LSTCS)
 LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
 SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
 WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
0
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                       YEAR 1955
 STATION 13995
 SITE LATITUDE DEG (AL1) 37.750000
 ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
 SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

3.500000E-01
 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 34650.820000
 FLOOR AREA (SQFT) 3706.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 325000.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -245500.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 37060.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 358.000000
 INFILTRATION PROFILE
                                            .000
                                                                          .000 .000
                                                                                                        1.00
                                                           .000
                             .000
              .000
   .000
                                                                          1.00
                                                           1.00
                                                                                        1.00
                                                                                                        1.00
  1.00 1.00 1.00
                                            1.00
                                                                                       .000
                                                                          .000
                                                                                                       .000
                                                            .000
                                              .000
                              .000
               .000
   .000
 A FACTOR IN INFILTRATION EQUATION (CINA) 6.200000E-01
 B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
 C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 9170.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 158.900000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 67.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

WALL DATA

1 2 3 4

4 0

994.0

107.0

107.0

107.0

107.0

10.0

10.0

10.0

10.7
```

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	.245
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)		01027	01027	01837
CN FACTORS	.01837	.01837	.0103/	5
NUMBER OF BN FACTORS (NB	5	5	5	•
BN FACTORS BN (BN)	00003	00003	. 00003	.00003
N=1	00003	-00283	.00283	.00283
N=2	.01017	.01017	.01017	.01017
N=3	.00498	.00498	.00498	.00498
N=2	.00037	.00037	.00037	.00037
N=6	*****	*****	****	*****
NIMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS				
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	****	****
ROOF AREA SQFT (AROF) ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	F) 1.12	(12000E-01	1	
ROOF TRANS FUNCTIONS USED (1=Y	ES, U=NO)	(IROOF)	-	
ROOF C TRANSFER FUNCTION (CNR)	5.4293	00E-02		
ROOF B TRANSFER FUNCTIONS (BNR .304E-02 .314E-01 .190E-01	.) 	122E+04	.122E+04	
ROOF D TRANSFER FUNCTIONS (DNR	1	. 1220.01		
1.00600 .822E-01	300E-03	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.	000000E+00)		
SKYLICHT WIDTH FT (SKW) 0.0	00000E+00			
SKYTICHT OVERHANG WIDTH FT (SK	OW) U.U	100000E+00		
OUTDURNO UTTOUT REQUE SEVITOUT	' RT (SKOH)	0.0000	00E+00	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	1		_	
SKYLIGHT SHADING COEFFICIENT (SHSK) 0	.000000E+0	0	1
SUMMER START MONTH AND DAY FOR	SHSK (MST	NDST)	, I	1
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	IDND)	1	1
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	O.000000E+	-00	202008	
DAYTIME SKY LIGHT U BTU/SQFT-H	K-K (SKIU)		1 292998	
FRACTION OF PROCESS HEAT TO IN	IAG) 1-AA- EGS IKKGGT	CE (FAP)	6.100000	E-01
FRACTION OF PROCESS HEAT TO IN	TEUMUT DE	Ca (LAL)	0.20000	

INTERNAL	GAINS	AND	PROFILES		
				THERMOSTAT	SET
				POINT DEG F	•

	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	8.	43435.	8620.	9820.		
HOUR	HO	OURLY FRAC	TION OF PE	AK		
1	.100	.012	.000	.000	70.0	76.0
2	.100	.012	.000	.000	70.0	76.0
3	.100	.012	.000	.000	70.0	76.0
4	.100	.012	.000	.000	70.0	76.0
5	.100	.012	.000	.000	70.0	76.0
6	.100	.012	.000	.000	70.0	76.0
7	.100	.012	.000	.000	70.0	76.0
8	.100	.012	.000	.000	70.0	76.0
9	.100	.012	.000	.000	70.0	76.0
10	.100	.012	.000	.000	70.0	76.0
11	.100	.012	.000	.000	70.0	76.0
12	.100	.012	.000	.000	70.0	76.0

```
76.0
                                                  .000
                                                                 70.0
                                      .000
              .100
                           .012
  13
                                                                              76.0
                                                                70.0
                                       .000
              .100
                           .012
                                                  .000
  14
                                                                70.0
                                                                              76.0
                           .012
                                       .000
                                                  .000
              .100
  15
                                                                              76.0
                                                  .000
                                                                70.0
                           .012
               .100
                                      .000
  16
                                                                              76.0
                                      .600
                                                  .600
                                                                70.0
              1.000
                           .600
  17
                                                                              76.0
                                                                70.0
                                     1.000
                                                 1.000
                           .900
              1.000
  18
                                                                              76.0
                                                                70.0
                           .900
                                                 1.000
                                    1.000
              1.000
  19
                                                 .500
                                                                              76.0
                                                                 70.0
                                     .500
                           .600
              1.000
  20
                                                                              76.0
                                      .000
                                                   .000
                                                                 70.0
                           .012
              .100
  21
                                                                              76.0
                                      .000
                                                                 70.0
                           .012
                                                  .000
               .100
  22
                                                                              76.0
                                      .000
                                                                 70.0
                           .012
                                                  .000
              .100
  23
                                                                              76.0
                                                  .000
                                                                 70.0
                                      .000
               .100
                           .012
  24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 60.000000
                              2
SYSTEM TYPE, (IECN)
                             6000.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F
                                       65.000000
                                       0.000000E+00
24.000000
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
SYSTEM MIXED AIR TEMP(TMXAIR)
                                        58.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN EFFICIENCY (EFAN)

FAN TOTAL PRESSURE IN. WATER (DP) 6.000000E-01

HEATING PLANT RATED OUTPUT BTU (HFLOT) 330000.000000

HEATING PLANT RATED INDUT BTU (HFLIN) 412500.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 412500.0000000 HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                         .369
                                                                                    .451
                                           .300
                                                                        .400
                       .200
                                    .286
            .191
 .100
                                                                        .800
                                                                                    .812
                                           .700 .718
                                    .625
             .537
                        .600
 .500
                                    1.00
                        1.00
            .906
 .900
CHILLER TYPE (ITYPCH) 3
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                                245500.000000
                                               64704.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                        .000
                                                                                    .000
                                   .000
                                                           .000
                        .000
                                              .000
             .000
 .000
                                                                                    .000
                                                .000
                                                                        .000
                                                           .000
                                    .000
             .000
                         .000
 .000
                                    .000
                        .000
             .000
 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-4.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (NIGHTIME)
(F

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

		SOLAR		PARTIT DOOR				VENT	
		THRU		AND			MATHON	AND	TAMENT
MNTH LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	MINDOM	TMET	.00
JAN .00		1.31	.00	.00	.00	.01	1 40	42 21	.00
-62.98	LOSS		-13.22	-5.97	.00	-13.93	-1.49	-43.21	.00
					00	00	00	00	.00
FEB .00	GAIN	1.78	.00	.00	.00	-10.52	1 27	-27 23	.00
-50.92	LOSS		-10.94	-5.07	.00	-10.52	-1.27	-37.23	.00
				00	00	.49	00	03	. 17
MAR 1.11	GAIN	2.27	.17	.00	.00	0.26	-1 17	-24 35	• 00
-42.80	LOSS		-9.90	-4.69	.00	-8.36	-1.11	-34.33	.00
			7.7	0.4	00	1.81	01	25	. 89
APR 6.53	GAIN	2.40	.73	-2.71		-3.94	_ 60	_10 55	00
-20.01	LOSS		-5.93	-2.71	.00	-3.74	00	19.55	•••
		0.64	1 46	12	00	3.68	. 03	. 76	3.59
MAY 15.86		2.64	1.40	-1.44	.00	-1.30	35	-9.42	.00
-6.16	LOSS		-3.57	-1.44	.00	1.50			
JUN 34.46	CATN	2 76	2 21	30	.00	5.46	.07	1.95	14.42
		2.76	_2 11	64	.00	5.46 25	15	-3.50	.00
72	FOSS		-2.11	.04		•			
JUL 47.08	CATN	2 78	3 07	. 71	. 00	7.11	.18	4.56	19.30
26	TOCC	2.70	-1 62	.71 40	.00	11	10	-2.29	.00
26	LUSS		-1.02	.40		·			
AUG 42.60	CATN	2 48	2 55	.54	.00	5.78	.13	3.37	18.61
AUG 42.60 54		2.40	_1 81	46	.00	16	11	-2.37	.00
54	TOSS		1.01	.40	• • • • • • • • • • • • • • • • • • • •				
SEP 23.60	CATN	2.06	1.35	.29	.00	3.24	.07	1.96	10.01
-5.72		2.00	-3.29	-1.18		-1.33	29	-8.43	.00
-5.72	DODD		0.27						
OCT 5.29	CATN	1.65	.37	.06	.00	.86	.01	.38	1.40
-18.68		2.00	-6.20	-2.55	.00	-4.40	62	-17.87	.00
10.00	Dobb								
NOV .77	GATN	1,20	.06	.00	.00	.17	.00	.03	.16
-34.38			-8.80	-3.80	.00	-8.16	93	-26.65	.00
34.30	TODD								
DEC .00	GATN	1.07	.00	.00	.00	.00 -14.14	.00	.00	.00
-61.94			-13.16	-5.88	.00	-14.14	-1.45	-42.15	.00
TOT 177.	GAIN	24.	12.	2.	0.	29.	1.	13.	69.
-305.	LOSS		-81.	-35.	0.	-67.	-9.	-247.	0.
MAX HEATING	LOAD=	-22	9631. 1	BTUH ON	DEC 18	HOUR 8	AME	SIENT TE	MP 1.
MAX COOLING	LOAD=	22	0347.	BTUH ON	JUL 28	HOUR 18	AME	SIENT TE	MP 90.

ZONE UA BTU/HR-F 1218.1

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-4.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (NIGHTIME)

(F

\-									FAN	TOTAL
INTERNA	INTE	RNAL : PERAT		DAY	_	OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	77.	68.	4 27	19 7	58. 4.	1.72	7.84	1.95	13.51
FEB	70.	77.	69.	25 2	19 7	47. 14.	1.57	7.15	1.76	12.30
MAR	71.	78.	69.	10 4	19 6	63. 15.	1.74	7.93	1.95	13.64
APR	72.	78.	69.	29 9	19 6	69. 30.	1.69	7.70	1.89	13.23
MAY	73.	78.	69.	26 3	19 8	75. 66.	1.72	7.84	1.95	13.51
JUN	75.	78.	69.	30 10	19 6	82. 66.	1.69	7.70	1.89	13.23
JUL	76.	79.	69.	15 24	18 7	92. 67.	1.74	7.93	1.95	13.64
AUG	76.	78.	70.	11 25	19 6	84. 51.	1.72	7.84	1.95	13.51
SEP	74.	78.	69.	2 18	19 9	83. 66.	1.71	7.79	1.89	13.36
OCT	72.	78.	68.	14 24	19 7	71. 67.	1.72	7.84	1.95	13.51
NOV	71.	78.	67.	17 8	19 7	59. 66.	1.67	7.61	1.89	13.11
DEC	70.	78.	68.	23 18	19 8	54. 1.	1.76	8.02	1.95	13.76
YEAR							20.42	93.20	22.97	160.31

639A-4.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (NIGHTIME) (F

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	11011221 0- 1	HOURS WHEN NOT MET OOLING	MAXIMUM BTT HEATING	
JAN	693	12	0	0	1988E+06	.0000
FEB	596	28	0	0	1770E+06	.0000
MAR	598	65	0	0	1768E+06	.1252E+06
APR	417	152	0	0	1125E+06	.1355E+06
MAY	265	266	Ö	0	7399E+05	.1627E+06
JUN	58	400	Ö	Ō	2645E+05	.2039E+06
JUL	28	530	Ö	0	2293E+05	.2203E+06
	38	494	Ö	Ō	3456E+05	.2066E+06
AUG	173	320	ŏ	Ö	6938E+05	.2021E+06
SEP	427	143	ŏ	Ö	9669E+05	.1274E+06
OCT	553	66	ŏ	Ō	1454E+06	.8926E+05
NOV	684	23	ő	Ö	2296E+06	.0000
DEC		2499	Ö	ŏ	2296E+06	.2203E+06
YEAR	4530	2499	U	U		

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-4.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	100.11	.00	1.72	.7.84	.57	13.51	12.4
FEB	82.60	.00	1.57	7.15	.52	12.30	12.4
MAR	74.56	.12	1.74	7.93	.57	13.64	24.1
APR	42.35	.69	1.69	7.70	.55	13.23	24.8
MAY	21.91	1.65	1.72	7.84	.57	13.51	26.6
JUN	4.56	3.44	1.69	7.70	.55	13.23	29.0
JUL	2.20	4.64	1.74	7.93	.57	13.64	29.9
AUG	2.99	4.26	1.72	7.84	.57	13.51	29.2
SEP	14.99	2.37	1.71	7.79	.55	13.36	28.9
OCT	41.30	.56	1.72	7.84	.57	13.51	24.3
NOV	63.91	.09	1.67	7.61	.55	13.11	18.3
DEC	98.50	.00	1.76	8.02	.57	13.76	12.4
YEAR	549.97	17.80	20.42	93.20	6.73	160.31	29.9

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 214949. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-4.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (NIGHTIME)

OTHER MONTHLY STATISTICS

				V						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYSTEMP. DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1988E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	1770E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.1252E+06	1768E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.1355E+06	1125E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.1627E+06	7399E+05
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2039E+06	2645E+05
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.2203E+06	2293E+05
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.2066E+06	3456E+05
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.2021E+06	6938E+05
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.1274E+06	9669E+05
NOV	1008.	710.	1.000	47.	0.	ο.	0	0	.8926E+05	1454E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	2296E+06

```
BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (DAYTIME) (FT
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)
                                                           1.375000
                                                               1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                     YEAR 1955
                                        37.750000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
                                                                   20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                                 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
                                                               70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 34650.820000
                        3706.000000
FLOOR AREA (SQFT)
                                                            325000.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX)
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -245500.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 37060.000000
                                                       358.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
INFILTRATION PROFILE
                                                                                             .000
                                                                1.00
                                                                                 1.00
                                         1.00
                                                      1.00
                           1.00
              1.00
  1.00
                                                                                              .000
                                                                 .000
                                                                                 .000
                                         .000
                                                     .000
              .000
                           .000
  .000
                                                    1.00
                                                                  1.00
                                                                                 1.00
                                                                                              1.00
                                         1.00
                            1.00
              1.00
 1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
2.165000E-02
8.330000E-03
A FACTOR IN INFILTRATION EQUATION (CINA)
C FACTOR IN INFILTRATION EQUATION (CINC)
                                                       9170.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 158.900000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 67.000000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
                                            WALL DATA
WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)
MAX SOLAR WITH NO SHADE(SOLMX)
120.0
                                                                       3
                                                                                   -90.00
```

U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	.245
WALL TRANSFER FUNCTIONS	01027	01027	01937	01837
CN FACTORS	.01837	.01037	.01037	.01037
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS RN (BN)	5	5	5	J
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	00003	00003	. 00003	.00003
N=1	.00003	.00003	00283	.00283
N=2	.00263	01017	01017	01017
N=3	.01017	.01017	01017	00498
N=4	.00436	00430	00037	00037
N=5	.00037	.00037	.00037	******
N=6	*****	****		E
NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS		1 00000	1 00000	1 00000
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50543
N=3	.65654	.65654	.65654	.00004
N=4	07415	07415	0/415	0/415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	****
POOR AREA SOFT (AROF) 4011	.000000			
ROOF U VALUE BTU/HR-SQFT-F (UPROOF TRANS FUNCTIONS USED (1=Y	(F) 1.12	0000E-01	_	
ROOF TRANS FUNCTIONS USED (1=Y	(ES, O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	5.4295	66E-02		
DOOR D MEANCERD FUNCTIONS / RNE	>			
.304E-02 .314E-01 .190E-01	.852E-03	.122E+04	.122E+04	
DOOR D TOXNEED FINCTIONS (DNE	? \			
1.00600 .822E-01	300E-03	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.00000	E+00		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.	000000E+00	1		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
SKYLIGHT OVERHANG WIDTH FT (SK	(OW) U.U	100000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	r ft (skoh)	0.0000	00E+00	
SKYLIGHT GLASS NUMBER (NS)	1	_	_	
SKYLIGHT SHADING COEFFICIENT ((SHSK) 0	.000000E+0	0	_
SUMMER START MONTH AND DAY FOR	R SHSK (MST	NDST)	1	_ 1
SUMMER END MONTH AND DAY FOR S	SHSK (MND, N	IDND)	1	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	0.00000E+	-00		
DAYTIME SKY LIGHT U BTU/SQFT-H	IR-F (SKYU)	1.	292998	
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	UN)	1.292998	
FRACTION OF PROCESS HEAT TO IN	ITERNAL SPA	CE (FAP)	6.100000	E-01

-----THERNAL GAINS AND PROFILES -----THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	8.	43435.	8620.	9820.		
HOUR	HO	OURLY FRACT	TION OF PEA	vk		
1	.100	.012	.000	.000	70.0	76.0
2	.100	.012	.000	.000	70.0	76.0
3	.100	.012	.000	.000	70.0	76.0
4	.100	.012	.000	.000	70.0	76.0
5	.100	.012	.000	.000	70.0	76.0
6	.100	.012	.000	.000	70.0	76.0
7	.100	.012	.000	.000	70.0	76.0
8	.100	.012	.000	.000	70.0	76.0
9	.100	.012	.000	.000	70.0	76.0
10	.100	.012	.000	.000	70.0	76.0
11	.100	.012	.000	.000	70.0	76.0
12	.100	.012	.000	.000	70.0	76.0
13	.100	.012	.000	.000	70.0	76.0

```
76.0
                                                          70.0
                                              .000
                        .012
                                   .000
              .100
  14
                                             .000
                                                          70.0
                                                                      76.0
              .100
                         .012
                                   .000
  15
                                                                      76.0
                                             .000
                                   .000
                                                          70.0
              .100
                        .012
  16
                                                                      76.0
                                                          70.0
                                   .600
                                             .600
                        .600
             1.000
  17
                                                          70.0
                                                                      76.0
                        .900
                                  1.000
                                            1.000
             1.000
  18
                                                                      76.0
                                                          70.0
                                  1.000
                                            1.000
                        .900
             1.000
  19
                                                                      76.0
                                                          70.0
                                              .500
                                   .500
                        .600
             1.000
  20
                                             .000
                                                          70.0
                                                                      76.0
                                   .000
             .100
                        .012
  21
                                                                      76.0
                                                          70.0
                        .012
                                   .000
                                             .000
  22
              .100
                                                                      76.0
                                                          70.0
                        .012
                                   .000
                                              .000
              .100
  23
                                                                      76.0
                                                          70.0
                                              .000
                                   .000
                        .012
              .100
  24
                                                   65.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                   60.000000
SYSTEM TYPE, (IECN)
                              2
                           6000.000000
SUPPLY AIR CFM (SACFM)
                                     65.000000
ECONOMIZER HIGH TEMP LIMIT F
SYSTEM SUPPLY AIR START TIME HR
                                     0.00000E+00
SYSTEM SUPPLY AIR STOP TIME HR
                                       24.000000
                                     58.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                              1.00000E-01
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                         5.500000E-01
FAN EFFICIENCY (EFAN)
                                        6.000000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
HEATING PLANT RATED OUTPUT BTU (HFLOT) 330000.000000
HEATING PLANT RATED INPUT BTU (HFLIN)
                                          412500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                      .369
                                                                 .400
                                                                           .451
                                           .300
                      .200
                                 .286
 .100
            .191
                                                                           .812
                                           .700
                                                      .718
                                                                 .800
            .537
                      .600
                                 .625
 .500
                                 1.00
            .906
                      1.00
 .900
                                  3
CHILLER TYPE (ITYPCH)
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                           245500.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
                                           64704.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                           .000
                                                      .000
                                                                 .000
                                           .000
                                 .000
            .000
                      .000
 .000
                                                                           .000
                                                      .000
                                                                 .000
                                           .000
                                 .000
            .000
                      .000
 .000
                                 .000
 .000
                      .000
            .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-5.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (DAYTIME) (FT

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

JAN	LOAD .00 -66.05	GAIN LOSS		ROOF	PARTITN DOOR AND SLAB .00 -5.95	BSMT	WALL .01 -13.89	WINDOW .00 -1.48	VENT AND INFL .00 -46.37	LATENT .00 .00
FEB	.00 -53.28	GAIN	1.78		.00	.00	.02	.00	.00	.00
MAR	1.11 -45.14	GAIN LOSS	2.27	.17 -9.86	.00 -4.67	.00	.49 -8.31	.00 -1.17	.02 -36.81	.19 .00
	6.41 -21.54		2.40	.73 -5.88	.04 -2.69		1.82 -3.88	.01 67	.21 -21.30	.89 .00
MAY	15.37 -7.23		2.64	1.46 -3.52	.12 -1.42		3.71 -1.26	.03 34	.63 -10.75	3.35 .00
JUN	33.20 -1.05		2.76	2.21 -2.06	.31 61	.00	5.52 21	.08 15	1.65 -4.25	13.69 .00
JUL	46.59 40		2.78	3.07 -1.59	.71 38		7.15 09	.18 09	4.09 -2.76	19.49 .00
AUG	41.90 71		2.48	2.55 -1.77	.54 44	.00	5.83 14	.13 11	2.99 -2.92	18.52 .00
SEP	22.73 -6.52		2.06	1.35 -3.25	.29 -1.16	.00	3.27 -1.30	.07 28	1.68 -9.51	9.57 .00
	5.09 -20.15	GAIN LOSS	1.65	.37 -6.16	.06 -2.53		.87 -4.35	.01 62	.30 -19.52	1.35 .00
	.75 -36.43		1.20	.06 -8.76	.00 -3.79	.00	.17 -8.11	.00 92	.03 -28.84	.16 .00
	.00 -64.99	GAIN LOSS	1.07	.00 -13.13	.00 -5.86	.00	.00 -14.10	.00 -1.44	.00 -45.29	.00
TOT	173. -323.	GAIN LOSS	24.	12. -80.	2. -35.	0. 0.	29. -66.	1. -9.	12. -268.	67. O.
MAX MAX	HEATING COOLING	LOAD=	-23 24	5161. 1825.	BTUH ON I	DEC 18 JUL 28	HOUR 7 HOUR 18	AME AME	SIENT TE	MP -1. MP 90.

ZONE UA BTU/HR-F 1218.1

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-5.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (DAYTIME)
(FT

(FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERAT		DAY	1	OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	77.	68.	4 27	19 7	-	1.72	7.84	1.95	13.51
FEB	70.	77.	69.	25 2	19 7		1.57	7.15	1.76	12.30
MAR	70.	78.	69.	10 4	19 6		1.74	7.93	1.95	13.64
APR	72.	78.	69.	29 9	19 6		1.69	7.70	1.89	13.23
MAY	73.	78.	69.	26 11	19 6		1.72	7.84	1.95	13.51
JUN	75.	78.	69.	30 10	19 6		1.69	7.70	1.89	13.23
JUL	76.	79.	69.	15 24	18 7		1.74	7.93	1.95	13.64
AUG	76.	78.	70.	11 25	19 6		1.72	7.84	1.95	13.51
SEP	74.	78.	68.	2 5	19 7	_	1.71	7.79	1.89	13.36
OCT	72.	78.	68.	14 24	19 7		1.72	7.84	1.95	13.51
NOV	70.	78.	67.	17 8	19 7		1.67	7.61	1.89	13.11
DEC	70.	78.	68.	23 18	19 7		1.76	8.02	1.95	13.76
YEAR							20.42	93.20	22.97	160.31

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-5.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (DAYTIME) (FT

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF LOADS WER	HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING C		HEATING	COOLING
JAN	705	6	0	O	2178E+06	.0000
FEB	612	21	0	0	1845E+06	.0000
MAR	610	58	0	0	1828E+06	.1274E+06
APR	429	143	0	0	1193E+06	.1378E+06
MAY	283	255	0	0	8607E+05	.1703E+06
JUN	74	382	0	0	3155E+05	.2227E+06
JUL	36	514	0	0	2764E+05	.2418E+06
	43	475	Ö	Ô	4166E+05	.2261E+06
AUG		307	Ö	Ö	8147E+05	.2174E+06
SEP	176		ő	ŏ	1114E+06	.1345E+06
OCT	437	136	-	_	1590E+06	.8939E+05
NOV	564	58	0	0		
DEC	698	18	0	0	2352E+06	.0000
YEAR	4667	2373	0	0	2352E+06	.2418E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-5.I

SYSTEM TOTALS

	HEATING	COOLING	Y CONSUMPT	PROCESS	TO FANS THOUSAND	OTAL INTERNAL HEAT GAIN MILLION	MAXIMUM ELECTRIC DEMAND
MONTH	MILLION BTU	THOUSAND KWH	THOUSAND KWH	MILLION BTU	KWH	BTU	KW
JAN	103.86	.00	1.72	7.84	.57	13.51	12.4
FEB	85.97	.00	1.57	7.15	.52	12.30	12.4
MAR	77.63	.12	1.74	7.93	.57	13.64	24.3
APR	44.51	.68	1.69	7.70	.55	13.23	25.0
MAY	23.87	1.59	1.72	7.84	.57	13.51	27.0
JUN	5.82	3.30	1.69	7.70	.55	13.23	30.1
JUL	2.83	4.57	1.74	7.93	.57	13.64	31.1
AUG	3.40	4.16	1.72	7.84	.57	13.51	30.2
SEP	15.99	2.28	1.71	7.79	.55	13.36	29.8
OCT	43.47	.54	1.72	7.84	.57	13.51	24.4
NOV	66.54	.08	1.67	7.61	.55	13.11	18.3
DEC	102.31	.00	1.76	8.02	.57	13.76	12.4
YEAR	576.17	17.31	20.42	93.20	6.73	160.31	31.1

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 221568. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639A-5.I

BLDG 639 - Post Exchange - Store/ Snack Bar - Zone 1 OUTSIDE AIR (DAYTIME) (FT

OTHER MONTHLY STATISTICS

				OIL	EK HON	TILDI O				
MONTE	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.		STEM DRIFT G. F	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	2178E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	1845E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.1274E+06	1828E+06
APR	2242.	1552.	1.000	5 5.	0.	0.	0	0	.1378E+06	1193E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.1703E+06	8607E+05
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.2227E+06	3155E+05
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.2418E+06	2764E+05
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.2261E+06	4166E+05
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.2174E+06	8147E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.1345E+06	1114E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.8939E+05	1590E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	2352E+06

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO.: BLDG. TYPE: 639Z2 PX (GAME ROOM)

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	85.0	44.8	43.4			
COOLING (kWH)	3370	1510	1430			

SUPPLY AIR FAN	1000 CFM
FLOOR AREA	1046 FT ²
CFMI	93 CFM
UA	446 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOLIBS OF	OCCUPANCY			ANNUAL HEATING & COOLING HOURS		
M-F	1700	2000	15 HR	HR. ON HEATING	650 HR/YR	
SAT.	1700	2000	3 HR	HR. ON COOLING	436 HR/YR	
SUN.	1300	2000	7 HR	HR. OFF HEATING	3718 HR/YR	
30N.		TOTAL OCCUPY HR.		HR. OFF COOLING	2492 HR/YR	
	TOTAL UNOC		25 HR/WK 143 HR/WK			
		ANNUAL OCCUPY HR.				
	ANNUAL UNC		7456 HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 650 = 3718 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 436 = 2492 HR/YR

HOAUHO	85 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	93 CFM *	7456 HR/YR			
HOAUH	85 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
<u> </u>	93 CFM *	3718 HR/YR			
COAUHC	3370 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	93 CFM *	7456 HR/YR			
COAUC	3370 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	93 CFM *	2492 HR/YR			
HOAOHC	OHC 85 MBtu - 0	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	93 CFM *	1304 HR/YR			
НОАОН	85 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	93 CFM *	650 HR/YR			
COAOHC	3370 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	93 CFM *	1304 HR/YR			
COAOC	3370 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
33/133	93 CFM *	436 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
	1/6 (10 MINUTES PER		=	0.17	
50 52 (110					

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

04-Mar-93

DATE: BUILDING NO.:

639Z2

BLDG. TYPE:

PX (GAME ROOM)

ENERGY CONSTANT CALCULATIONS

ECC	1430 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR		
Ī	1000 CFM *	436 HR/YR				
ECHC	1430 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR		
	1000 CFM *	1304 HR/YR				
NSUCHO	3370 kWH -	1510 kWH	=	2.49E-04 kWH/CFM-HR		
	1000 CFM *	7456 HR/YR				
NSUCC	3370 kWH -	1510 kWH	=	7.46E-04 kWH/CFM-HR		
	1000 CFM *	2492 HR/YR				
DDCCHC	1510 kWH -	1430 kWH	=	6.14E-05 kWH/CFM-HR		
	1000 CFM *	1304 HR/YR				
DDCCC	1510 kWH -	1430 kWH	=	1.84E-04 kWH/CFM-HR		
	1000 CFM *	436 HR/YR				
NSC	85 MBtu -	44.78 MBtu	_ =	9.02E+04 Btu/UA		
	446 l	JA				
DSC	44.78 MBtu -	43.35 MBtu	_ =	3.21E+03 Btu/UA		
	446 l					
OPT	(2 HR/DAY X 272 DAY/	YR) - 294	HR/YR			
	•		=	250 HR/YR		
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)			
	•		=	13.9 kWH/TON		
OAR	506 HR/YR *	0.01	=	5.06 HR/YR		
	•					

03-Feb-93 DATE: E M C ENGINEERS, INC. BY: BHS PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204.000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 639BZ1 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: POST EXCHANGE - ZONE 2 639B BLDG NO: **GAME ROOM BLDG FUNCTION:** 1 # FLOORS 1,046 FLOOR AREA: (SQ. FT) 92 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST SOUTH EAST NORTH 1,144 248 315 581 (SQ. FT) 0 WALLS, GROSS 27 0 27 0 0 (SQ. FT) **GLASS** 0 49 49 0 0 (SQ. FT) PERSONNEL DOOR 0 0 0 0 0 (SQ. FT) OVERHEAD DOOR 1,068 239 248 581 0 (SQ. FT) WALLS, NET 1,046 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 49 0 PERSONNEL DOOR (SQ. FT) (SQ. FT) OVERHEAD DOOR 0 0 0 0 (SQ. FT) BASEMENT WALLS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) **R-VALUE** COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 **OUTSIDE AIR FILM** 0.19 4'BRICK/METAL PANAL 0.91 AIR SPACE 4"FACE BRICK 4.98 1.5" INSULATION AIRSPACE 1.89 6" CMU 1 1/2" RIGID THSULATION 6"CMU 0.68 INSIDE AIR FILM TOTAL R-WALL = 8.82 0.113 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 **BUILT UP ROOF** 1.5" INSULATION 4.98 BUILT-UP POOF 1.00 CEILING AIR SPACE 4. 12"INSULATION 1.79 **ACOUSTIC TILE** 5. CEILING AIR SHAVE 6. 0.68 ACOUSTIC TILE INSIDE AIR FILM 8.95 TOTAL R-ROOF = 0.112 U=1/R1.61 R-GLASS PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. **GLASS TYPE:** 0.83 SLAB TYPE FLOOR: CEMENT R-BASEM. 0.00 NONE BASEMENT TYPE: R-ODOOR 0.00 NONE OVERHEAD DOOR TYPE: 2.56 R-PDOOR PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 79 0.069 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0 0.000 = X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR 14 1.385 X CFM /OPENING /HR 22 DOOR OPENINGS / HR - DOUBLE DOORS 10 93 TOTAL INFILTRATION (CFM) 0 0.000 X DOOR "U" 0 = ODOOR AREA **UA ODOOR** 19 0.391 X DOOR 'U' 49 = PDOOR AREA **UA PDOOR** 121 X WALL 'U' 0.113 1,068 = WALL AREA **UA WALL** 117 X ROOF 'U' 0.112 = 1,046 = ROOF AREA **UA ROOF** 17 X GLASS "U" 0.621 = 27 = GLASS AREA **UA GLASS** 76 0.830 = X SLF = SLAB PERIM. 92 UA SLAB 0 X BASE. "U" 0.000 UA BASEM. =B-WALL AREA 0 96 1.035 X A. T. F. == INFILTRATION 93 CFM 446 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 EMC NO.: DATE: PREPA CHECK FILE: BLDG:

ZONE

TOT Sen. TOT. Lat (BTU/H) (BTU/H) 2,700 2,200

Latent (BTU/H)

Rates of Heat Gain from Occupants of Conditioned Spaces

220

270

Sensible (BTU/H)

Application Retail store, bank

Type Degree of Activity
5 Standing, light work, or walking slowly

Activity

No. of People

Zone Š. 10

9

TOTAL.

Typical

2,200

2,700

TOTAL

03 – Feb – 93	SH8	띰	639BZ1	1000
ń.	PARED BY:	CKED BY:		ć

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture		Watts/Fixture Total Wattage	Total Wattage
2	rixiures 1ype	ad A	Fluorescent 4 - 34w k	168	336
-	2 68		18 Incardescent – 60w	9	1,920
	3				

2256

TOTAL

34

TOTAL

1	(BTU)	10,239	!									10,239
	Total Wattage	3,000										3,000
	Heat Gain to Space (%)	15%										15%
	Average Wattage to Space (%)	300										TOTAL
Peak Value for Internal Gains	Description	Video Games	201									
	Equip.	2										
	Zone No. of Equip.		2									
	Zone	2	-		•							

EMC Engineers, Inc.

PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY CLIENT CONTRACT NO.: DACA 41-92-C-0098 CLIENT PROJ. ENG. DOUG CAGE

LOCATION: FT. LEONARD WOOD

BLDG TYPE

03-Feb-93 3204-000 EMC NO.: DATE:

BHS CEL PREPARED BY: CHECKED BY:

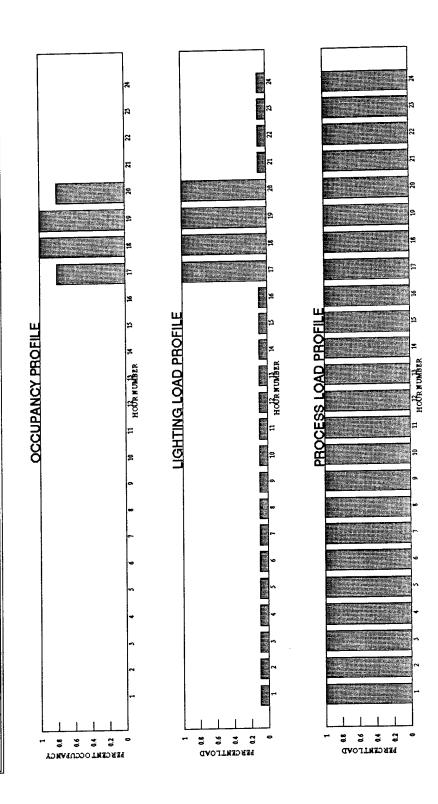
639BZ1

639B

FILE: BLDG: ZONE:

0.1

0.1 19 20 21 18 9 10 11 12 13 14 15 16 17 0.1 0. 0.1 HOUR NUMBER 0. 0.1 0.1 0.1 0. 8 0.1 0.1 ဖ <u>.</u> ß 0. -က 0.7 0. 0.1 Post Exchange OCCUPANCY TYPE OF PROFILE LIGHTING PROCESS FUNCTION BLDG



```
BEACON Energy Analysis By Energy Systems Engineers, Inc.
 BLDG 639 - Post Exchange Game room - Zone 2 BASERUN (FT LEONARD WOOD, MO)
 ----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
 ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.375000
 LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
                                                     1
 SKY CLEARNESS FACTOR (CLN) 1.000000
 NUMBER OF ZONES (NZ)
 WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                   YEAR 1955
 STATION 13995
                                    37.750000
 ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.0000000
 SITE LATITUDE DEG (AL1)
 SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

3.500000E-01
 SOLAR REFLECTANCE OF GROUND (ING DEG F (TAO) 70.000000
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)
 INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.00000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 9415.590000
 FLOOR AREA (SQFT) 1046.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 93.000000
  INFILTRATION PROFILE
                                                                        .850
                                                            .850
                                                                                   .850
                                                .850
                                     .850
                          .850
             .850
   .850
                                                            .850
                                                                                   .850
                                               .850
                                                                       .850
                       .850
                                     .850
   .850
             .850
                                                .850
                                                            .850 .850
                                                                                  .850
                                     1.00
                          1.00
             1.00
   1.00
  A FACTOR IN INFILTRATION EQUATION (CINA) 5.930000E-01
  B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
  C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 5230.000000
  BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 75.900000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 19.100000
WINDOW GLASS NUMBER (NG) 30
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
```

	WALL DAT	A		
WALL NUMBER AZIMUTH ANGLE (AZ) WALL AREA SQFT (AWLL) WINDOW AREA SQFT (AWND)	.00 581.0 .0	2 90.00 248.0 .0	3 180.00 .0	4 -90.00 239.0 27.0 2.7
WINDOW HEIGHT FT (WNDH) WINDOW WIDTH FT (WNDW) WIDTH OF OVERHANG (WOH) OVERHANG HGT ABV WNDW(HOH)	.0 .0 .0	.0 .0 .0	.0 .0 .0	10.0

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	.113	.113	.113	.113
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN)	,			
WALL TRANSFER FUNCTIONS	.00416	.00416	.00416	.00416
ON FACTORS OF BN FACTORS (NB	5	5	5	5
DN FACTORS BN (BN)				00001
N-1	.00001	.00001	.00001	.00001
N=2	.00058	.00058	.00058	.00058
N=3	.00229	.00229	.00229	00229
N=4	.00119	.00119	.00000	.00009
N=5	.00009	.00009	.00009	*****
N=6	*****	****	E .	5
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	5	5	5	· ·
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1 00000	1 00000	1.00000	1.00000
N=1	1.00000	_1 71940	-1.71940	-1.71940
N=2	0/375	84375	.84375	.84375
N=3	- 09022	09022	09022	09022
N=4	00368	.00268	.00268	.00268
N=5	******	******	*****	****
() 1046	nnnnn			
ROOF AREA SQFT (AROF) 1046 ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	F) 1.12	0000E-01		
ROOF U VALUE BTU/HK-SQFI-F (OF	TES ()=NO)	(IROOF)	1	
ROOF TRANS FUNCTIONS USED (1-1	5.4295	66E-02		
ROOF B TRANSFER FUNCTIONS (BNF	.)			
ROOF B TRANSFER FUNCTIONS (BNF .304E-02 .314E-01 .190E-01	.852E-03	.122E+04	.122E+04	
ROOF D TRANSFER FUNCTIONS (DNF	1)			
= 600 - 822E - 01	300E-03	999.	999.	
	O. GOGGOG	IETUU		
- avvitacim botmiith angle deckess	I MASK!	9999000	0000	
AND TAIM UPTOUR BY (SKH) U.	いいいいいひとせいし	,		
CPVT TCUT WIDTH FT (SKW) U.U.)UUUUUE+UU		-	
A COMPANY OF THE COURT A POUR SKYLIGHT	TT (SKOH)	0.0000	OUETUU	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SUMER END FOR SUMER END FOR SUMER END FOR SUMER END FOR SUMER END FOR SUMER END	1		.	
SKYLIGHT SHADING COEFFICIENT ((SHSK)).000000E+C	1	1
SUMMER START MONTH AND DAY FOR	SHSK (MS)	INDSI)	1	1
SUMMER END MONTH AND DAY FOR S	HSK (MND,	ן טאטן -00	-	-
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	ישטטטטטטט.ט פרמי	1.	292998	
DAYTIME SKY LIGHT U BTU/SQFT-F	L-AD-E (CK/ IV-E (DVIO)	יווא)	1.292998	
NIGHT TIME SKYLIGHT U BTU/SQLI	L-HK-F (SKI ITRIATI (SPI	CE (FAP)	1.500000)E-01
FRACTION OF PROCESS REAT TO IT	ATEMMAN DES	(/		

INTERNAL	GAINS	AND	PROFILES		
INIBIMID	0111110			THERMOSTAT	SET
				POINT DEG F	•

	KW - LIGHTS		,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	PEOPLE LATENT	HEATING	COOLING	
PEAK VAL	2.	1536.	2700.	2200.			
HOUR	HO	URLY FRACT			70.0	76.0	
1	.100	1.000	.000	.000		76.0	
2	.100	1.000	.000	.000	70.0		
3	.100	1.000	.000	.000	70.0	76.0	
4	.100	1.000	.000	.000	70.0	76.0	
5	.100	1.000	.000	.000	70.0	76.0	
6	.100	1.000	.000	.000	70.0	76.0	
7	.100	1.000	.000	.000	70.0	76.0	
<i>'</i>	.100	1.000	.000	.000	70.0	76.0	
8		1.000	.000	.000	70.0	76.0	
9	.100		.000	.000	70.0	76.0	
10	.100	1.000		.000	70.0	76.0	
11	.100	1.000	.000		70.0	76.0	
12	.100	1.000	.000	.000	,0.0	,	

```
76.0
                                 .000
                                                        70.0
                                            .000
             .100
                      1.000
  13
                                                                   76.0
                                                        70.0
                                .000
                                            .000
                      1.000
            .100
  14
                                                                   76.0
                                            .000
                                                        70.0
                                .000
            .100
                      1.000
  15
                                                                   76.0
                                           .000
                                                       70.0
                                .000
                      1.000
             .100
  16
                                                                   76.0
                                                       70.0
                                           .800
                                 .800
                      1.000
            1.000
  17
                                                        70.0
                                                                   76.0
                                1.000
                                           1.000
                    1.000
1.000
1.000
                      1.000
            1.000
  18
                                                                   76.0
                                                        70.0
                                           1.000
                               1.000
            1.000
  19
                                           .800
                                                                   76.0
                                                        70.0
                                .800
            1.000
  20
                                                                    76.0
                                            .000
                                                        70.0
                                 .000
             .100
  21
                                                                    76.0
                                            .000
                                                        70.0
                                 .000
                     1.000
             .100
  22
                                                                    76.0
                                .000
                                                        70.0
                                            .000
                      1.000
             .100
  23
                                                                    76.0
                                 .000
                                                        70.0
                                           .000
                      1.000
             .100
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 60.000000
  24
                           2
SYSTEM TYPE, (IECN)
                        1000.000000
SUPPLY AIR CFM (SACFM) 1000.000000
ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
                                   24.000000
SYSTEM SUPPLY AIR STOP TIME HR
                                  65.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                           0.00000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
                                       6.00000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
.400
                                                                         .451
                                       .300
                                                 .369
                     .200
                                .286
           .191
                                     .700 .718
                                                               .800
                                                                       .812
                      .600
                                .625
           .537
 .500
                                1.00
                     1.00
           .906
                                 3
CHILLER TYPE (ITYPCH)
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                           42000.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 10750.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                         10750.000000
                                                                          .000
                                                               .000
                                          .000
                                                   .000
                     .000
                                .000
           .000
 .000
                                                    .000
                                                                          .000
                                                               .000
                                .000
                                          .000
                      .000
 .000
            .000
                      .000
                                .000
            .000
 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B.I

BLDG 639 - Post Exchange Game room - Zone 2 BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOR AND	•			VENT AND	TAMENT
митн	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL .00	WINDOW	TMLT	LATENT
JAN	.00 -12.95	GAIN	.34	.00	.00	.00	.00	.00	-0.00	.00
••••	-12.95	LOSS		-3.41	-2.49	.00	-2.40	3/	-8.10	.00
				00	00	00	. 01	.00	.00	.00
	-10.25	LOSS		-2.82	-2.11	.00	-1.78	32	-0.00	•••
MAR	.25	GAIN	.57	.05		.00	.11	.00	.01	.04
		LOSS		-2.56	-1.96	.00	-1.39	29	-6.15	.00
	•••							00	0.5	.19
APR	1.24	GAIN	.60	.21	.02	.00	.34	.00	.05	
•••	-3.36	LOSS		-1.56	-1.15	.00	64	17	-3.30	.00
								01	11	.71
MAY	3.12	GAIN	.67		.05	.00	.65	.01	.11 -1.66	
	65	LOSS		99	66	.00	19	10	-1.66	.00
						00	.99	02	.29	2.91
JUN	7.20	GAIN	.68	.59	.12	.00	.99	05	- 78	.00
	.00	LOSS		62	33	.00	03	05	•,0	
					.29	.00	1.38	.04	.74	3.97
JUL		GAIN	.70	46		.00	01	03	48	.00
	.00	LOSS		40	20	.00	•01	• • • • • • • • • • • • • • • • • • • •		
	0.40	CATN	6 1	68	.22	.00	1.20	.03	.53	3.98
AUG		GAIN	.01	51		.00	02	03	53	.00
	01	TOSS		• • •	•==	• • • •				
SEP	5.29	GAIN	. 52	.36	.12	.00	.72	.02		2.22
SEP		LOSS	• • • •	92			19	08	-1.44	.00
	• , _									
ОСТ	1.05	GAIN	.42	.10	.02		.23	.00	.06	.29
001		LOSS		-1.64	-1.10	.00	68	16	-2.98	.00
								00	00	.06
NOV	.19	GAIN	.31		.00		.06	.00	-4.64	.00
	-6.42	LOSS		-2.28	-1.60	.00	-1.31	23	-4.64	•00
							00	00	00	.00
	.00		.28	.00	.00		.00 -2.41	- 36	-7 78	.00
	-12.58	LOSS		-3.40	-2.46	.00	-2.41	30	7.70	•00
					0.4	00	E 60	12	2.09	14.35
TOT	38.03	GAIN	6.17	3.23	14 00	.00	-11.04	-2.20	-44.77	.00
	-58.24	LOSS		-21.18	-14.82	.00	11.04	2.20		
	HEATING	T 0 3 5	4	4000	מת עוודם	DEC 18	HOUR 8	AMB	IENT TE	MP 1.
MAX	HEATING	LOAD=	. - 4	1308	BAILH ON	JUL 28	HOUR 18	AMB	IENT TE	MP 90.
MAX	COOLING	TOWD=	• •	1390.	21011 011	J - 20				

ZONE UA BTU/HR-F 273.7

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B.I

BLDG 639 - Post Exchange Game room - Zone 2 BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTEF	ERAT	SPACE URE F MIN	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	75.	69.	4 27	20		.46	8.36	.33	3.48
FEB	70.	75.	69.	13 2	20	59. 7 14.	.42	7.62	.29	3.17
MAR	71.	78.	69.	12 3	20		.47	8.45	.33	3.51
APR	72.	79.	70.	14 9	2	0 54. 6 30.	.45	8.20	.31	3.41
MAY	74.	78.	70.	9 11	2	0 54. 6 39.	.46	8.36	.33	3.48
JUN	76.	77.	70.	30 18		8 85. 6 59.	.45	8.20	.31	3.41
JUL	76.	77.	71.	15 10			.47	8.45	.33	3.51
AUG	76.	77.	70.	11 25	-	8 87. 6 51.	.46	8.36	.33	3.48
SEP	74.	80.		16	2	0 55. 6 39.	.46	8.29	.31	3.45
OCT	72.	80.		20	2	0 50. 5 31.	.46	8.36	.33	3.48
NOV	71.	80.		17	2	0 56. 7 18.	.45	8.11	.31	3.38
DEC	70.	78.		23	2	0 55. 7 -1.	.47	8.54	.33	3.55
YEAR			٠,٠				5.47	99.28	3.83	41.31

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B.I

BLDG 639 - Post Exchange Game room - Zone 2 BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	LOADS WERE		BTU	
MONTH	HEATING	ECONOMIZER	HEATING CO	OLING	HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	714 610 586 336 115 5 0 3 108 352 510 698 4037	0 0 24 111 246 465 604 607 348 91 23 0 2519	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	4132E+053528E+053485E+052196E+051475E+05 -18880000 -45981320E+051928E+052872E+054400E+05	.0000 .0000 .1985E+05 .2275E+05 .2887E+05 .3788E+05 .4140E+05 .3861E+05 .3889E+05 .2312E+05 .1494E+05 .0000 .4140E+05

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	TAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	18.32	.00	.46	8.36	.10	3.48	3.2
FEB	14.79	.00	.42	7.62	.09	3.17	3.2
MAR	12.62	.03	.47	8.45	.10	3.51	5.1
APR	5.76	.13	.45	8.20	.09	3.41	5.3
MAY	1.49	.31	.46	8.36	.10	3.48	5.7
JUN	.05	.69	.45	8.20	.09	3.41	6.2
JUL	.00	.96	.47	8.45	.10	3.51	6.3
AUG	.03	.90	.46	8.36	.10	3.48	6.2
SEP	1.48	.51	.46	8.29	.09	3.45	6.2
OCT	5.53	.11	.46	8.36	.10	3.48	5.2
NOV	10.11	.02	.45	8.11	.09	3.38	4.3
DEC	17.82	.00	.47	8.54	.10	3.55	3.2
YEAR	88.03	3.65	5.47	99.28	1.12	41.31	6.3

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 212481. BTU/(SQFT-YEAR)

639B.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 639 - Post Exchange Game room - Zone 2 BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				0						
;	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	4132E+05
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.0000	3528E+05
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.1985E+05	3485E+05
APR	2312.	1600.	1.000	55.	0.	0.	0	0	.2275E+05	2196E+05
MAY	2566.	1826.	1.000	65.	0.	٥.	0	0	.2887E+05	1475E+05
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.3788E+05	-1888.
JUL	2546.	2015.	1.000	77.	0.	٥.	0	0	.4140E+05	.0000
AUG	2280.	1840.	1.000	76.	0.	ο.	0	0	.3861E+05	-4598.
SEP	1856.	1371.	1.000	68.	0.	٥.	0	0	.3889E+05	1320E+05
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.2312E+05	1928E+05
NOV	1039.	732.	1.000	47.	0.	٥.	0	0	.1494E+05	2872E+05
DEC	883.	604.	1.000	35.	0.	0.	0	5	.0000	4400E+05

```
BLDG 639 - Post Exchange Game room - Zone 2 NIGHT SETBACK (FT LEONARD WOOD,
MO
    ----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.375000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
 SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
 WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
  ----- SITE AND BUILDING DATA -----
  *****REAL WEATHER FROM DISK******
  FILE NAME MO
                            YEAR 1955
  STATION 13995
 ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
  SITE LATITUDE DEG (AL1)
                                               37.750000
 AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01 SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000 INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03 INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00 VOLUME OF ZONE IN CURIC FEET (VOLUS)
  VOLUME OF ZONE IN CUBIC FEET (VOLHS) 9415.590000
  FLOOR AREA (SQFT) 1046.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 93.000000
  INFILTRATION PROFILE
                                                     .850
                                   .850
                                                                                                      .850
                                                                      .850
                                                                                        .850
                                                                                                                          .850
    .850
              .850
    .850
                                                                                        .850
                                                                                                        .850
                                  .850
                                                                     .850
                                                                                                                          .850
                                                     .850
                  .850
                                                                                        .850 .850
                                                                      .850
                                                                                                                         .850
                                    1.00
                                                     1.00
                   1.00
    1.00
  A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

5.930000E-01

2.165000E-02

8.330000E-03

5230.000000
  BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 75.900000
  PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 19.100000
WINDOW GLASS NUMBER (NG) 30
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
  WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 581.0 248.0 .0 239.0
WINDOW AREA SQFT (AWND) .0 .0 .0 27.0
WINDOW HEIGHT FT (WNDH) .0 .0 .0 2.7
WINDOW WIDTH FT (WNDW) .0 .0 .0 10.0
WIDTH OF OVERHANG (WOH) .0 .0 .0 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
II VALUE RTII/(HR-SOFT-F) (UW)	.113	.113	.113	.113	
WALL TRANSFER FUNCTIONS				00416	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.00416	.00416	.00416	.00416	
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN)		00001	00001	00001	
N=1	.00001	.00001	.00001	00001	
N=2	.00058	.00058	.00038	00229	
N=3	.00229	.00229	00119	.00119	
N=4	.00119	.00119	.00119	.00009	
N=5	.00009	+++++++	******	*****	
N=6	****	*****	5	5	
NUMBER OF DN FACTORS (ND)	5	5	3	•	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6		1 00000	1 00000	1.00000	
N=1	1.00000	1.00000	-1 71940	-1.71940	
N=2	-1./1940	-1.71940	84375	.84375	
N=3	.843/3	.04373	- 09022	09022	
N=4	09022	00368	00268	.00268	
N=5	.00268	.00200	******	*****	
N=6	******	888888			
ROOF AREA SQFT (AROF) 1046	.000000	0000B 01			
ROOF U VALUE BTU/HR-SQFT-F (UR	F) 1.12	(1200E)	1		
ROOF TRANS FUNCTIONS USED (1=Y	ES, U=NO)	(IROOF)	-		
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR	5.4295	66E-02			
ROOF B TRANSFER FUNCTIONS (BNR	.)	1005104	1225404		
ROOF B TRANSFER FUNCTIONS (BNR .304E-02 .314E-01 .190E-01	.852E-03	.122E+U4	.122E+04		
BOOD D BONNEGED FINGUITONS LINK	1				
1.00600 .822E-01	300E-03	999.	999.		
SKYLIGHT TILT DEGREES (TILT)	0.000000)E+UU	000		
CRVITCHT AZIMITH ANGLE DEGREES	(AZSK)	9999.000	000		
evvitour uricht fr (SKH) 0.	DDDDDDDE+UC)			
ervitcht width ft (SKW) U.U					
ERVITCHT OVERHANG WIDTH FT (SK	OW) U.U	100000E+00	00#+00		
OVERHANG HEIGHT ABOVE SKYLIGHT					
SKYLIGHT GLASS NUMBER (NS)	CHCK/ T	000000000000000000000000000000000000000	in		
SKYLIGHT SHADING COEFFICIENT (SHON) (MCT	י אַרטטטטטפּיט	1	1	
SUMMER START MONTH AND DAY FOR	nen (MND)	י במאחו)	1	1	
SUMMER END MONTH AND DAI FOR S	O COCCOOLS	-nn	-		
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	O.UUUUUUU	1.	292998		
DAYTIME SKY LIGHT U BIU/SQFI-D	LUD-E (SK)	TIN)	1.292998		
FRACTION OF PROCESS HEAT TO IN	TEDNAT CDE	CE (FAP)	1.500000	E-01	
WEEKEND COOLING THERMOSTAT PRO	IRMME OF	(1111)			
90.0 90.0 90.0	60 U	90.0	90.0	90.0	90.0
90.0 90.0 90.0	90.0	30.0	50.0	• • • • • • • • • • • • • • • • • • • •	
	90.0	90.0	76.0	76.0	76.0
90.0 90.0 90.0	30.0	30.0	, , , ,	* * * * *	
76.0	90.0	90.0	90.0	90.0	90.0
76.0 76.0 76.0	90.0	30.0	50.0	• • • •	
	ETT E				
WEEKEND HEATING THERMOSTAT PRO	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.5			
55.0 55.0 55.0	55.0	55.0	70.0	70.0	70.0
55.0 55.0 55.0	JJ.0				
70.0 70.0 70.0	55.0	55.0	55.0	55.0	55.0
70.0 70.0 70.0					

INTERNAL	GAINS	AND	PROFILES		
				THERMOSTAT SE	ŝΤ
				POINT DEG F	

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
2200.
                                2700.
           2. 1536.
PEAK VAL
          - - - HOURLY FRACTION OF PEAK - - - -
  HOUR
55.0
                                                                90.0
           .100 1.000 .000 .000
   1
                                           .000
                                                                 90.0
                                                      55.0
                                                     55.0
55.0
55.0
55.0
55.0
55.0
                                                                  90.0
                                                                  90.0
                                                                  90.0
                                                                  90.0
                                                                  90.0
                                                      55.0
                                                                  90.0
                                                                  90.0
                                                      55.0
                                                                  90.0
                                                      55.0
                                                      55.0
                                                                   90.0
                                                      55.0
55.0
                                                                   90.0
                                                                  90.0
                                                                  90.0
                                                       55.0
                                                    55.0
70.0
70.0
70.0
55.0
                                                                  90.0
                                                                  76.0
                                                                  76.0
                                                                  76.0
                                                                 90.0
                                                                  90.0
                                                      55.0
                                                    55.0
                                                                  90.0
                                                       55.0
                                                                  90.0
 SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 1000.000000
 ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 65.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
 FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 6.000000E-01
 HEATING PLANT RATED OUTPUT BTU (HFLOT) 44000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 55000.000000
 HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                              .286 .300 .369 .400 .451
                     .200
  .100
           .191
                     .600 .625 .700 .718 .800
                                                                    .812
            .537
  .500
 .900 .906 1.00 1.00
CHILLER TYPE (ITYPCH) 3
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 42000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 10750.000000
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                             .000
                                                                       .000
                  .000 .000 .000 .000
  .000
          .000
                              .000 .000 .000
                                                            .000
                                                                       .000
  .000 .000 .000
                               .000
  .000 .000 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-2.I

BLDG 639 - Post Exchange Game room - Zone 2 NIGHT SETBACK (FT LEONARD WOOD, MO

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOR AND				VENT AND	
			THRU WINDOW	POOF		BSMT	WALL	WINDOW		LATENT
	LOAD	CATN	.34	01	. 00	- 00	.02	.00	.01	.00
JAN	.00	LOSS	. 34	-2 48	-1.74	.00	-1.46	26	-5.40	.00
	-7.44	FOSS		2.40						
	.00	GAIN	.46	. 03	.00	.00	.08	.00	.01	.00
FEB		LOSS	.40	-2.03	-1.46		-1.02	22	-4.55	.00
	-5.53	LOSS		2.00						
W D	.14	CATN	57	.11	.02	.00	.24	.00	.05	.02
MAR		LOSS		-1.86		.00	75	20	-4.13	.00
	-3.90	POSS		1.00						
	.88	GAIN	60	.28	.04	.00	.45	.01	.11	.11
APR		LOSS	.00	-1.25		.00	35	13	-2.50	.00
	-1.08	LOSS		1.25						
	2.22	GAIN	.67	.39	. 04	.00	.63	.01	.09	.33
MAY	02		.07	96	64	.00	15	09	-1.59	.00
	02	LUSS		. , 0		• • • •				
T TT31	3.95	GAIN	68	.44	.04	.00	.76	.01	.08	.93
JUN		LOSS	.00	72	45		05	06	-1.08	.00
	.00	DODD		*						
JUL	5.24	GAIN	.70	.54	.08	.00	.91	.01	.19 92	1.34
301		LOSS		66	38	.00	03	06	92	.00
	.00	2000								
AUG	4.51	GAIN	.61	.46	.07	.00	.81	.01	.16	1.03
		LOSS		70	40	.00	04	06	95	.00
SEP	2.68	GAIN	.52	.32			.62	.01	.19	.64
		LOSS		94	55	.00	15	08	-1.46	.00
										1.5
OCT	.68	GAIN	.42	.16	.05		.33		.13	
	66	LOSS		-1.30	80	.00	38	12	-2.11	.00
									0.7	0.3
NOV	.12	GAIN	.31	.06	.03			.00	.07	.03
		LOSS		-1.68	-1.10	.00	73	16	-3.08	.00
								00	00	.00
DEC	.00	GAIN	.28	.01	.01		.03	.00	.02	.00
	-7.20	LOSS		-2.48	-1.71	.00	-1.47	25	-5.16	.00
						••	F 01	07	1 11	4 56
	20.42		6.17	2.80	.44	.00	5.01	1 60	1.11	
	-28.66	LOSS		-17.07	-11.46	.00	-6.60	-1.09	-32.93	.00
				4000	DM1111 C31	DEC 21	HOUD 19	AME	אשי יינאדו	rp 41.
MAX	HEATING	LOAD=	-4	4000.	PLOH ON	DEC 21	HOUR 10	AME	SIENT TEN SIENT TEN	r 71.
MAX	COOLING	LOAD=	: 4	2000.	BIUH ON	OCT 5	HOOK TO	nr10	FERT TEL	- '

ZONE UA BTU/HR-F 273.7

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-2.I

BLDG 639 - Post Exchange Game room - Zone 2 NIGHT SETBACK (FT LEONARD WOOD,

110									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI MAX	URE F	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	59.	73.	54.	4 27	20 6	58. 4.	.46	8.36	.33	3.48
FEB	60.	75.	55.	25 2	20 7		.42	7.62	.29	3.17
MAR	62.	79.	55.	24 3	21 7		.47	8.45	.33	3.51
APR	68.	87.	55.	30 9	17 6		.45	8.20	.31	3.41
MAY	74.	90.	55.	29 11	17 7		.46	8.36	.33	3.48
JUN	79.	90.	70.	27 19	17 7		.45	8.20	.31	3.41
JUL	81.	90.	70.	26 10			.47	8.45	.33	3.51
AUG	80.	90.	68.	29 25			.46	8.36	.33	3.48
SEP	75.	90.	57.	10 15			.46	8.29	.31	3.45
ост	67.	87.	55.	4 28			.46	8.36	.33	3.48
NOV	63.	80.	55.	8			.45	8.11	.31	3.38
DEC	59.	77.	54.	29 18		_	.47	8.54	.33	3.55
YEAR							5.47	99.28	3.83	41.31

639B-2.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 639 - Post Exchange Game room - Zone 2 NIGHT SETBACK (FT LEONARD WOOD, MO

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF	HOURS WHEN	MAXIMUM BTU	
MONTH	HEATING	ECONOMIZER	HEATING		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	510 384 310 109 5 0 0 1 71 262 485	0 0 10 49 94 129 175 139 91 35 11	30 25 18 7 0 0 0 0 0 5 15 33	0 0 3 15 46 73 64 30 4 0	4400E+05 4400E+05 4400E+05 1157E+05 .0000 .0000 .0000 -282.7 4400E+05 4400E+05	.0000 .0000 .2129E+05 .4200E+05 .4200E+05 .4200E+05 .4200E+05 .4200E+05 .4200E+05 .2817E+05
YEAR	2137	733	133	235	4400E+05	.4200E+05

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	11.29	.00	.46	8.36	.10	3.48	3.2
FEB	8.43	.00	.42	7.62	.09	3.17	3.2
MAR	6.25	.01	.47	8.45	.10	3.51	5.1
APR	1.92	.08	.45	8.20	.09	3.41	5.5
MAY	.06	.19	.46	8.36	.10	3.48	5.6
JUN	.00	.32	.45	8.20	.09	3.41	6.1
JUL	.00	.42	.47	8.45	.10	3.51	6.4
AUG	.00	.36	.46	8.36	.10	3.48	6.2
SEP	.01	.22	.46	8.29	.09	3.45	6.4
OCT	1.23	.06	.46	8.36	.10	3.48	5.5
NOV	4.79	.01	.45	8.11	.09	3.38	4.8
DEC	10.87	.00	.47	8.54	.10	3.55	3.2
YEAR	44.85	1.68	5.47	99.28	1.12	41.31	6.4

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 164767. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-2.I

BLDG 639 - Post Exchange Game room - Zone 2 NIGHT SETBACK (FT LEONARD WOOD, MO

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	٥.	0	30	.0000	4400E+05
FEB	1464.	929.	1.000	37.	0.	ο.	0	25	.0000	4400E+05
MAR	1922.	1254.	1.000	43.	0.	٥.	0	18	.2129E+05	4400E+05
APR	2312.	1600.	1.000	55.	0.	٥.	3	7	.4200E+05	4400E+05
MAY	2566.	1826.	1.000	65.	0.	٥.	15	0	.4200E+05	1157E+05
JUN	2647.	1993.	1.000	72.	0.	0.	46	0	.4200E+05	.0000
JUL	2546.	2015.	1.000	7 7.	0.	0.	73	0	.4200E+05	.0000
AUG	2280.	1840.	1.000	76.	0.	ο.	64	0	.4200E+05	.0000
SEP	1856.	1371.	1.000	68.	0.	ο.	30	0	.4200E+05	-282.7
OCT	1437.	953.	1.000	57.	0.	٥.	4	5	.4200E+05	4400E+05
NOV	1039.	732.	1.000	47.	0.	ο.	0	15	.2817E+05	4400E+05
DEC	883.	604.	1.000	35.	0.	ο.	0	33	.0000	4400E+05

```
BLDG 639 - Post Exchange Game room - Zone 2 DDC SETBACK (FT LEONARD WOOD, MO)
 PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
                                                                             0
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.375000
                                                                1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
                    YEAR 1955
STATION 13995
                                       37.750000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000 INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03 INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
                                                                      70.000000
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 9415.590000
FLOOR AREA (SQFT) 1046.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 44000.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -42000.000000
COND RETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 44000.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 44000 CONSTANT INFILTRATION RATE CFM (CFMI) 93.000000
INFILTRATION PROFILE
                                      .850 .850 .850 .850
                                                                                                    .850
                            .850
             .850
  .850
                                                                                      .850
                                                                                                     .850
                                          .850 .850
                                                                       .850
         .850 .850
  .850
                                                         .850
                                                                       .850
                                                                                       .850
                                                                                                    .850
  1.00 1.00 1.00
                                            1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 5.930000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 5230.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 75.900000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 19.100000
WINDOW GLASS NUMBER (NG) 30
 WINDOW GLASS NUMBER (NG)
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                                WALL DATA
2
                                                                             3
                                                                                          -90.00
```

U VALUE BTU/(HR-SQFT-F) (UW)	.113	.113	.113	.113	
WALL TRANSFER FUNCTIONS		00416	00416	00416	
CN FACTORS	.00416	.00416	.00410	.00410	
NUMBER OF BN FACTORS (NB	5	5	5	3	
BN FACTORS BN (BN)		00001	00001	00001	
N=1	.00001	.00001	00001	00058	
N=2	.00058	.00036	.00030	.00229	
N=3	.00229	00229	00119	.00119	
N=4	.00119	.00113	90000	.00009	
N=5	.00009	.00009	******	*****	
N=6	******	*****	E	5	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	3	J	
DN FACTORS		1 00000	1 00000	1 00000	
N=1	1.00000	1.00000	1.00000	-1 71940	
N=2	-1.71940	-1.71940	04275	94375	
N=3	.84375	.84375	.043/5	.04373	
N=4	09022	09022	09022	00022	
N=5	.00268	.00268	.00268	.00200	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	****	*****	*****	******	
ROOF AREA SQFT (AROF) 1046	.000000				
ROOF AREA SQFT (AROF) 1046 ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	(F) 1.12	0000E-01	•		
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	5.4295	66E-02			
ROOF B TRANSFER FUNCTIONS (BNF	()				
.304E-02 .314E-01 .190E-01	.852E-03	.122E+04	.122E+04		
BOOK B REPARCED WINCTIONS (INC	()				
1.00600 .822E-01	300E-03	999.	999.		
EXVITAGE TILT DEGREES (TILT)	0.000000)近十00			
CKVITCHT AZIMUTH ANGLE DEGREES	S (AZSK)	9999.000	0000		
EVVITOUT UNICHT RT (SKH) 0.	.000000E+0L)			
GEVITCHT WIDTH FT (SKW) 0.0	00000E+00				
attending Cither for /Cl	70W 11 (16161616161818146161			
OVERHANG HEIGHT ABOVE SKYLIGHT	r ft (skoh)	0.0000	00E+00		
ABUTTOUT CIACS NUMBER INSI	1				
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	(SHSK)	0.00000E+0	00	1	
SUMMER START MONTH AND DAY FOR	R SHSK (MS)	(,NDST)	1	1	•
SUMMER END MONTH AND DAY FOR S	SHSK (MND, N	NDND)	1		
SKY LIGHT AREA SQFT (ASKY)	0.00000E	F00			
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	IR-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT	T-HR-F (SKY	(UN)	1.292998	n 01	
FRACTION OF PROCESS HEAT TO IN	iternal sp <i>i</i>	ACE (FAP)	1.500000	E-01	
					00 0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
				70.0	78.0
90.0 90.0 90.0	90.0	90.0	78.0	78.0	70.0
				00 0	90.0
78.0 78.0 78.0	90.0	90.0	90.0	90.0	90.0
WEEKEND HEATING THERMOSTAT PRO	OFILE		A	EE 0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
	*		60.6	60 0	68.0
55.0 55.0 55.0	55.0	55.0	68.0	68.0	60.0
			55 C	EE 0	55.0
68.0 68.0 68.0	55.0	55.0	55.0	55.0	55.0

		INTERNAL	GAINS AND	PROFILES		
		2112211111			THERMOS!	TAT SET
					POINT D	EG F
	KW -	B1				
			-	EOPLE	TITE S IN T NIC	COOLING
	LIGHTS	PROCESS SENS		TENT	HEATING	COOPING
PEAK VAL	2.	1536.	2700.	2200.		

```
- - - HOURLY FRACTION OF PEAK - - - -
  HOUR
55.0
                                                              90.0
           .100 1.000 .000 .000
   1
                                          .000
                                                                90.0
                                                    55.0
            .100
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                78.0
                                                                78.0
                                                                78.0
                                                                90.0
                                                                90.0
                                                                90.0
                                                                 90.0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 1000.000000
ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 65.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 6.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 44000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 55000.000000
                                        55000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                          .400 .451
                             .286 .300 .369
                  .200
          .191
                              .625 .700 .718 .800
                                                                    .812
                     .600
           .537
  .500
                    1.00 1.00
           .906
  .900
 CHILLER TYPE (ITYPCH)
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 42000.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 10750.000000
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                               .000
                                                           .000 .000
                             .000 .000
          .000
                 .000
       .000 .000 .000 .000
                                                            .000
                                                                      .000
  .000
                              .000
  .000 .000 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-1.I

BLDG 639 - Post Exchange Game room - Zone 2 DDC SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOR AND				VENT AND	
N/N/MIT	LOAD		WINDOW	ROOF		BSMT	WALL	WINDOW	INFL	LATENT
JAN		GAIN	.34	.01	.00	.00	.03	.00	.01	.00
UAN		LOSS		-2.44	-1.70	.00	-1.42	25	-5.28	.00
									01	.00
FEB	.00	GAIN	.46	.03	.00		.08	.00	.01	.00
		LOSS		-1.99	-1.43	.00	98	21	-4.44	.00
					00	00	24	00	.05	.01
MAR	.07	GAIN	.57	.11	.02 -1.35	.00	72	20	-4.06	.00
	-3.70	LOSS		-1.84	-1.35	.00	/ 2	.20		
	70	CRIN	60	.28	.04	- 00	.43	.01	.11	.10
APR		GAIN LOSS	.00	-1.26		.00	35	13	-2.53	.00
	90	FOSS		1.20	.00					
MAY	1.93	GAIN	. 67	.38	.03	.00	.60	.01	.08	.32
LINI		LOSS	• • •	-1.01		.00	17	10	-1.69	.00
	.01									
JUN	3.66	GAIN	.68	.43	.03	.00	.72	.00	.07	.93 .00
	.00	LOSS		77	49	.00	07	07	-1.18	.00
					.07	00	.87	01	. 17	1.33
JUL		GAIN	.70	.53 69	40	.00	04	06	99	.00
	.00	LOSS		09	40	.00	• • •			
AUG	4.31	GAIN	.61	.45	.06	.00	.78	.01	.14	1.04
AUG		LOSS		73		.00	05	06	-1.01	.00
								01	17	63
SEP		GAIN	.52	.31			.58		.17 -1.55	.00
	.00	LOSS		98	58	.00	17	09	-1.55	.00
	- 4	G	40	.16	.05	.00	.33	. 01	.13	.11
OCT		GAIN LOSS	.42	-1.31		.00	38	12	-2.12	.00
	50	LOSS		1.51	.01					
NOV	.06	GAIN	.31	.06	.03	.00	.15	.00	.07	.02
1101		LOSS		-1.65	-1.08	.00	70	16	-3.01	.00
									00	00
DEC		GAIN	.28	.01	.01		.03		.02 -5.05	
	-6.97	LOSS		-2.44	-1.67	.00	-1.43	25	-5.05	.00
	10 72	a	e 17	2 74	A 1	00	4.83	.06	1.02	4.49
	18.73		0.11	2.74 17 10	-11.49	.00	-6.51	-1.70	-32.90	.00
	-27.32	TOSS		-11.10	77.42	.50	0.01		- -	
MAX	HEATING	LOAD=	-4	4000.	BTUH ON	DEC 31	HOUR 18	AMB	IENT TEM	IP 41.
MAX	COOLING	LOAD=	4	2000.	BTUH ON	OCT 5	HOUR 18	AMB	IENT TEM	IP 71.

ZONE UA BTU/HR-F 273.7

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-1.I

BLDG 639 - Post Exchange Game room - Zone 2 DDC SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	RNAL S		DAY	(OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH		HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DUI	III.	THIDI.				2 40
JAN	59.	73.	54.	4 27	20 6	58. 4.	.46	8.36	.33	3.48
FEB	59.	74.	55.	25 2	20 7		.42	7.62	.29	3.17
MAR	62.	81.	55.	24 3	20 7		.47	8.45	.33	3.51
APR	68.	87.	55.	30 9	17 6	-	.45	8.20	.31	3.41
MAY	74.	90.	55.	29 11	17 7		.46	8.36	.33	3.48
JUN	79.	90.	70.	27 19	17 7		.45	8.20	.31	3.41
JUL	82.	90.	71.	26 10			.47	8.45	.33	3.51
AUG	81.	90.	69.	29 25			.46	8.36	.33	3.48
SEP	76.	90.	57.	10 15			.46	8.29	.31	3.45
OCT	68.	87.	55.	4 28			.46	8.36	.33	3.48
NOV	63.	80.	55.	8			.45	8.11	.31	3.38
DEC	59.	76.	54.	29 18			.47	8.54	.33	3.55
YEAR							5.47	99.28	3.83	41.31

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-1.I

BLDG 639 - Post Exchange Game room - Zone 2 DDC SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		F HOURS WHEN ERE NOT MET COOLING	MAXIMUM BTU HEATING	
JAN	514	0	27	0	4400E+05	.0000
FEB	389	0	18	0	4400E+05	.0000
MAR	310	7	13	0	4400E+05	.1454E+05
	110	41	3	2	4400E+05	.4200E+05
APR	5	90	Ö	10	-2789.	.4200E+05
MAY		129	Ö	38	.0000	.4200E+05
JUN	0		Ö	61	.0000	.4200E+05
JUL	O	174	_		.0000	.4200E+05
AUG	0	138	0	55	• • • •	.4200E+05
SEP	0	88	0	19	.0000	• •
OCT	69	31	2	2	4400E+05	.4200E+05
NOV	258	5	11	0	4400E+05	.1961E+05
DEC	492	Ô	28	0	4400E+05	.0000
YEAR	2147	703	102	187	4400E+05	.4200E+05

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-1.I

SYSTEM TOTALS

			Y CONSUMPT			TAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	FANS THOUSAND KWH	MILLION BTU	DEMAND KW
MONTH	BTU	KWH	VMU	D 10			
JAN	11.02	.00	.46	8.36	.10	3.48	3.2
FEB	8.21	.00	.42	7.62	.09	3.17	3.2
MAR	6.02	.01	.47	8.45	.10	3.51	4.7
APR	1.82	.07	.45	8.20	.09	3.41	5.5
MAY	.05	.17	.46	8.36	.10	3.48	5.6
JUN	.00	.30	.45	8.20	.09	3.41	6.1
JUL	.00	.41	.47	8.45	.10	3.51	6.3
AUG	.00	.35	.46	8.36	.10	3.48	6.1
SEP	.00	.20	.46	8.29	.09	3.45	6.1
OCT	1.09	.05	.46	8.36	.10	3.48	5.5
NOV	4.53	.01	.45	8.11	.09	3.38	4.2
DEC	10.65	.00	.47	8.54	.10	3.55	3.2
YEAR	43.40	1.56	5.47	99.28	1.12	41.31	6.3

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 162987. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 639B-1.I

BLDG 639 - Post Exchange Game room - Zone 2 DDC SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.	MAX SYS TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	27	.0000	4400E+05
FEB	1464.	929.	1.000	37.	0.	0.	0	18	.0000	4400E+05
MAR	1922.	1254.	1.000	43.	ο.	0.	0	13	.1454E+05	4400E+05
APR	2312.	1600.	1.000	55.	0.	0.	2	3	.4200E+05	4400E+05
MAY	2566.	1826.	1.000	65.	0.	0.	10	0	.4200E+05	-2789.
JUN	2647.	1993.	1.000	72.	ο.	٥.	38	0	.4200E+05	.0000
JUL	2546.	2015.	1.000	77.	0.	0.	61	0	.4200E+05	.0000
AUG	2280.	1840.	1.000	76.	0.	0.	55	0	.4200E+05	.0000
SEP	1856.	1371.	1.000	68.	0.	٥.	19	0	.4200E+05	.0000
OCT	1437.	953.	1.000	57.	0.	0.	2	2	.4200E+05	4400E+05
NOV	1039.	732.	1.000	47.	ο.	0.	0	11	.1961E+05	4400E+05
DEC	883.	604.	1.000	35.	0.	0.	0	28	.0000	4400E+05

COMPUTER SIMULATIONS

BUILDING 651

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY: DATE: AJN 05-Mar-93

BUILDING NO .:

651

BLDG. TYPE:

BARRACKS

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	3338.9	3049.1	2765.5	2765.5		2945.4
COOLING (kWH)	55060	55060	49800	49590		48350

SUPPLY AIR FAN	27148 CFM
FLOOR AREA	40986 FT ²
CFMI	3167 CFM
UA	9330 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & COOLING HOURS		
M-F	0000171101	2400	120 HR	HR. ON HEATING	4368 HR/YR	
SAT.	0	2400	24 HR	HR. ON COOLING	2928 HR/YR	
SUN.	0	2400	24 HR	HR. OFF HEATING	0 HR/YR	
SUN.	TOTAL OCCU		168 HR/WK	HR. OFF COOLING	0 HR/YR	
	TOTAL UNOC		0 HR/WK			
	ANNUAL OCC		8760 HR/YR			
	ANNUAL UNC		0 HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING

8760 HR/YR 4368 HR/YR

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

2928 HR/YR

HOUR SAVE (HEATING ONLY)
HOUR SAVE (COOLING ONLY,

4368 2928 4368 = 2928 =

0 HR/YR 0 HR/YR

HOAUHC	3338.9 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	3167 CFM *	0 HR/YR		
HOAUH	3338.9 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	3167 CFM *	0 HR/YR		
COAUHC	55060 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	3167 CFM *	0 HR/YR		
COAUC	55060 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	3167 CFM *	0 HR/YR		
HOAOHC	3338.9 MBtu -	2945.4 MBtu	=	1.42E+01 Btu/CFM-HR
	3167 CFM *	8760 HR/YR		
НОАОН	3338.9 MBtu -	2945.4 MBtu	=	2.84E+01 Btu/CFM-HR
	3167 CFM *	4368 HR/YR		
COAOHC	55060 kWH	48350 kWH	=	2.42E-04 kWH/CFM-HR
	3167 CFM *	8760 HR/YR		
COAOC	55060 kWH	48350 kWH	=	7.24E-04 kWH/CFM-HR
	3167 CFM *	2928 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 05-Mar-93

DATE: BUILDING NO.:

651

BLDG. TYPE:

BARRACKS

ENERGY CONSTANT CALCULATIONS

ECC	49800 kWH -	49590 kWH	=	2.64E-06 kWH/CFM-HR	
Ţ	27148 CFM *	2928 HR/YR			
ECHC	49800 kWH -	49590 kWH] =	8.83E-07 kWH/CFM-HR	
Ţ	27148 CFM *	8760 HR/YR		10514 115	
NSUCHO	55060 kWH -	55060 kWH	=	0.00E+00 kWH/CFM-HR	
	27148 CFM *	0 HR/YR			
NSUCC	55060 kWH -	55060 kWH	=	0.00E+00 kWH/CFM-HR	
	27148 CFM *	0 HR/YR			
DDCCHC	55060 kWH -	49800 kWH	=	2.21E-05 kWH/CFM-HR	
	27148 CFM *	8760 HR/YR			
DDCCC		49800 kWH	=	6.62E-05 kWH/CFM-HR	
	27148 CFM *	2928 HR/YR			
NSC	3338.9 MBtu -	3049.1 MBtu	=	3.11E+04 Btu/UA	
	9330	UA			
DSC	3049.1 MBtu -	2765.5 MBtu	=	3.04E+04 Btu/UA	
	9330	UA			
OPT	(2 HR/DAY X 272 DAY	/YR) – 294	HR/YR		
	•	·	=	0 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
]		· ·	=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	
J					

03-Feb-93 DATE: EMC ENGINEERS, INC. BY: BHS PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204.000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 651BHL FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 651 BLDG NAME: BARRACKS BLDG NO: BLDG FUNCTION: # FLOORS 3 40,986 FLOOR AREA: (SQ. FT) SLAB PERIMETER: (FT) 514 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST EAST SOUTH . NORTH 21,866 1,845 1,845 9,088 9,088 (SQ. FT) WALLS, GROSS 938 19 17 435 467 (SQ. FT) **GLASS** 0 120 0 80 40 (SQ. FT) PERSONNEL DOOR 468 9 9 217 233 INSULATED PANEL (SQ. FT) 20,341 1,817 8,396 1,819 8,308 (SQ. FT) WALLS, NET 13,662 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 468 PERSONNEL DOOR (SQ. FT) 120 (SQ. FT) INSULATED PANEL 0 0 0 0 (SQ. FT) BASEMENT WALLS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 AIR SPACE 4"CMU / 9" L.W. CONC 3.00 4"FACE BRICK AIR SPACE 5. 6. 4" CMC 0.68 INSIDE AIR FILM 5.19 TOTAL R-WALL = 0.193 U = 1/R R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 OUTSIDE AIR FILM 0.34 BUILT UP ROOF 2. 6.68 2' INSULATION 3. BUILT-UP ROOF 6.25 7" L.W. CONCRETE 4. Z" INSULATION 5. 7" L.W. CONCPETE 6. 0.68 INSIDE AIR FILM 14.12 TOTAL R-ROOF = 0.071 U=1/R1.61 R-GLASS PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. GLASS TYPE: SLF 0.83 CEMENT SLAB TYPE FLOOR 0.00 R-BASEM BASEMENT TYPE: NONE 4.20 R-PANEL INSULATED PANEL 2.56 R-PDOOR METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 0.042 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 3,018 0.138 X CFM / SQ.FT. 21866 AVG. WALL H/M/L (SQ.FT.) Н 0 0.000 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 80 X CFM /OPENING /HR 1.600 200 DOOR OPENINGS / HR - SINGLE DOOR 69 X CFM /OPENING /HR 1.385 254 DOOR OPENINGS / HR - DOUBLE DOORS 3167 TOTAL INFILTRATION (CFM) = 111 X PANEL "U" 0.238 468 = PANEL AREA **UA PANEL** 47 X DOOR 'U' 0.391 = 120 = PDOOR AREA **UA PDOOR** 3,917 X WALL "U" 0.193 = 19,873 WALL AREA **UA WALL** 968 X ROOF 'U' 0.071 = 13,662 = ROOF AREA **UA ROOF** 582 0.621 X GLASS 'U' 938 = GLASS AREA **UA GLASS** 427 0.830 X SLF = SLAB PERIM. 514 **UA SLAB** 0 0.000 X BASE. 'U' 0 =B-WALL AREA UA BASEM. 3,278 1.035 X A. T. F. 3167 **CFM** INFILTRATION 9,330 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 03-Feb-93 EMC NO.: DATE:

છું		
_		

TOT. Lat (BTU/H)

TOT Sen. (BTU/H) 84,150

Latent (BTU/H)

Sensible (BTU/H)

Typical
Application
Theater, Movie

Degree of Activity

1 Seated at rest

374

374

TOTAL

Activity

No. of People

Zone

Rates of Heat Gain from Occupants of Conditioned Spaces

39,270

55

225

39.270

84,150

TOTAL

8	
	ćī

			ZONE
	CE.	651ZN1	651
PREPARED BY:	CHECKED BY:	FILE	BLDG:

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			:
Ž	Fixtures	TVDB	Description	Watts/Fixture	Total Wattage
-		5	Fluorescent, 1 - 34w lamp, 16w ballast (1x4 ft. fixture)	20	906
	92		6 Fluorescent, 2 - 34w temps, 16w ballast (2x4 ft. fixture)	84	6,384
	64		8 Fluorescent 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	10,752
	102	ľ	18 Incandescent - 60w	09	6,120
TOTAL	Ogc			TOTAL	24,156
2	3	-			

			Peak Value for Internal Gains				
Zone	No. of Equip.	Equip.			Heat Gain	700	Total
Š	Eguipmen	TVDe	Description	Average Wattage to Space(%) total Wattage	to Space (%)	lotal Wattage	DI Q
-	9	85	Washing Machine (Auto	512	50%	3,072	10,485
	9			4,856	45%	29,136	99,441
				TOTAL	43%	32,208	109,926

EMC Engineers, Inc.

PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY CLIENT CONTRACT NO.: DACA 41-92-C-0098 CLIENT PROJ. ENG: DOUG CAGE LOCATION: FT. LEONARD WOOD

BLDG TYPE

03-Feb-93 3204-000 DATE: PREPARED BY: EMC NO:

CHECKED BY:

CEL 651ZN1 651

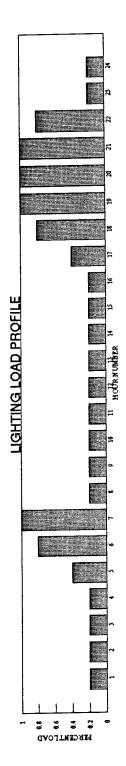
FILE: BLDG: ZONE:

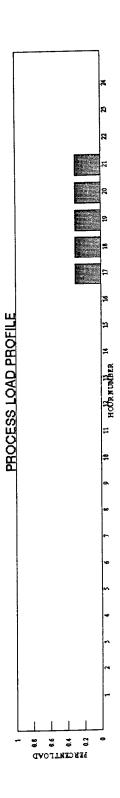
23 24 02 02 18 19 20 21 22 08 05 05 08 1 0.8 0.4 0.8 1 1 1 0.3 0.3 0.3 0.3 0.3
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17

 0.6
 0.4
 0.1
 0.1
 0.1
 0.1
 0.1
 0.1
 0.3
 0.8

 1
 0.2
 0.2
 0.2
 0.2
 0.2
 0.2
 0.2
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.8
 0.8
 0.8
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4
 0.4</t HOUR NUMBER 0.8 2 4.0 02 02 02 02 OCCUPANCY PROFILE TYPE OF LIGHTING FUNCTION BLDG Barracks







BLDG 651 - BARRACKS WITH A/C - BASERUN (FT LEONARD WOOD, MO)

```
PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)
                                                                      1.000000
                                                                       1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER SOURCE ISW=0 TAVE, ECT. (ISW)
0
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                         YEAR 1955
                                              37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SITE LATITUDE DEG (AL1)
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

3.500000E-01
INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.00000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.00000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
 FLOOR AREA (SQFT) 40986.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -891200.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 3167.000000
 INFILTRATION PROFILE
                                                                                               .670
                                                                                .670
                                                                                                               .670
                                                                 .670
                                 .670
                                                .670
                 .670
  .670
                                                             1.00 1.00
                                                                                               1.00
                                                                                                                1.00
                                1.00
                                                1.00
                1.00
  1.00
                                              .670 .670 .670 .670
                                 .670
                 1.00
   1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 4.350000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 231200.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 47.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                                     משמם דדמה
```

	WALL DA	ĽA		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	8613.0	1828.0	8541.0	1826.0
WINDOW AREA SQFT (AWND)	435.0	18.5	467.0	17.2
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	43.5	1.9	46.7	1.7
WIDTH OF OVERHANG (WOH)	2.5	2.5	2.5	2.5
OVERHANG HGT ABV WNDW(HOH)	1.0	1.0	1.0	1.0
OVERHANG HET ABY WILDWIDON!	1.0			

MAX SOLAR WITH NO SHADE (SOLMX)	120.0	120.0	120.0	120.0
II VALUE BTU/(HR-SOFT-F) (UW)	.194	.193	• 134	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN)		01447	01454	01454
CN FACTORS	.01454	.0144/	.01454	.01434
NUMBER OF BN FACTORS (NB	5	5	3	J
NUMBER OF BN FACTORS (ND) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF BN FACTORS (ND)	00002	00002	.00002	.00002
N=1	.00002	.00223	.00224	.00224
N=2	.00224	.00801	.00805	.00805
N=3	.00394	.00392	.00394	.00394
N=6	.00029	.00029	.00029	.00029
N=6	*****	*****	*****	*****
NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS				1 00000
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943 6565 <i>1</i>
N=3	.65654	.65654	07/15	- 07415
N=4	07415	0/415	00212	00212
N=5	.00212	.00212	.00212	*****
N=6	*****	*****		
ROOF AREA SQFT (AROF) 13662	.000000	0000E-03		
ROOF U VALUE BTU/HR-SQFT-F (UR	(F) /.10	(TROOF)	1	
ROOF TRANS FUNCTIONS USED (1-Y	ES, U=NO)	(IROOF)	_	
ROOF C TRANSFER FUNCTION (CNR)	1.1//2	7335 03		
ROOF B TRANSFER FUNCTIONS (BNR .000 .121E-03 .613E-03	403E-03	403E-04	806.	
ROOF D TRANSFER FUNCTIONS (DAR 1.00 -1.46 .533 SKYLIGHT TILT DEGREES (TILT)	- 611E-01	.820E-03	999.	
1.00 -1.40 .555	0.000000	E+00		
CVVITCUT AZIMUTH ANGLE DEGREES	(ALON)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0000	
SKYLIGHT HEIGHT FT (SKH) 0.SKYLIGHT WIDTH FT (SKW) 0.0	000000É+00)		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
EVVITCHT OVERHANG WIDTH FT (SK	(OW) U.U	70000005400		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
TOUR OF NOC NUMBER (NC)	7			
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER START MONTH AND DAY FOR S	(SHSK)	J.000000E+C	1	1
SUMMER START MONTH AND DAY FOR	SHSK (MS)	(L'NDPI)	1	1
SUMMER END MONTH AND DAY FOR S	O OOOOOE	LOO	•	_
SKY LIGHT AREA SQFT (ASKY)	D-E (SKAII	1.	292998	
DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	L-HB-E (SKIO	, YUN)	1.292998	
FRACTION OF PROCESS HEAT TO IN	TERNAL SP	ACE (FAP)	4.300000	DE-01
FRACTION OF PROCESS HEAT TO IT	,	(

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET
POINT DEG F

	KW -		- BTU/HR - PEOPLE	PEOPLE		COOLING
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	24.	47268.	84150.	39270.		
HOUR	HC	URLY FRACT	TION OF PE			76.0
1	.200	.000	1.000	1.000	72.0	76.0
2	.200	.000	1.000	1.000	72.0	76.0
3	.200	.000	1.000	1.000	72.0	76.0
4	.200	.000	1.000	1.000	72.0	76.0
5	.400	.000	1.000	1.000	72.0	76.0
	.800	.000	1.000	1.000	72.0	76.0
6		.000	.800	.800	72.0	76.0
7	1.000		.400	.400	72.0	76.0
8	.200	.000			72.0	76.0
9	.200	.000	.100	.100		76.0
10	.200	.000	.100	.100	72.0	
11	.200	.000	.100	.100	72.0	76.0
12	.200	.000	.100	.100	72.0	76.0

```
.100
                                                                76.0
                                                     72.0
            .200
                      .000
                               .100
 13
                                         .100
                                                                76.0
                               .100
                                                     72.0
                      .000
            .200
 14
                                                     72.0
                                                                76.0
                               .100
                                         .100
                      .000
            .200
 15
                                                     72.0
                               .300
                                                                76.0
                                         .300
                     .000
           .400
 16
                                         .800
                                                    72.0
72.0
                                                                76.0
                     .300
                               .800
            .800
 17
                                         .800
                                                                76.0
                              .800
                     .300
           1.000
 18
                                        .500
                                                    72.0
                                                                76.0
                              .500
                     .300
           1.000
 19
                                                    72.0
                                        .500
                              .500
                     .300
           1.000
 20
                                                    72.0
                                                                76.0
                               .800
                                         .800
                      .300
           1.000
 21
                                                                76.0
                                                    72.0
                      .000
                                        1.000
           .800
                               1.000
 22
                                                                76.0
                      .000
                                                     72.0
                                       1.000
            .200
                               1.000
                                     1.000
 23
                                                                76.0
                                                     72.0
                             1.000
                      .000
            .200
 24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 68.000000
                          9
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM) 27148.000000
ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.00000 SYSTEM SUPPLY AIR STOP TIME HR 55.00000
                                   24.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
                                     8.00000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
VAV TYPE (IVAV)
                        1
                                         2.500000E-01
VAV MINIMUM SUPPLY AIR FRACTION (ARMIN)
                                        58.000000
VAV COLD DECK TEMPERATURE F (TCD)
VAV FAN PART LOAD FACTORS
                                                            .400
                                                                     .700
                                    .300 .620
                    .200
                              .560
          .560
 .000
                                                            .800
                                                                     .930
                                                 .880
          .770 .600
                                       .700
                              .830
 .500
                    1.00
                              1.00
           .980
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1700000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2125000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                            .400
                                                                      .451
                                                .369
                              .286 .300
                    .200
          .191
 .100
                                                 .718
                                                                      .812
                                                            .800
                                        .700
                     .600
                               .625
 .500
           .537
                              1.00
           .906
                     1.00
 .900
                              0
CHILLER TYPE (ITYPCH)
COOLING PLANT RATED OUTPUT BTU (CFLOT) 892000.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 164905.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                            .400
                                                                      .370
                                               .310
                              .250 .300
                    .200
 .100
           .200
                                    .700 .650
                                                                      .760
                                                            .800
                               .550
           .450
                    .600
 .500
                 1.00
                               1.00
  .900
       .880
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651.I

BLDG 651 - BARRACKS WITH A/C - BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITN DOOR AND				VENT AND	
	LOAD		THRU	ROOF	STAB	BSMT	WALL	WINDOW	INFL	LATENT
JAN	LOAD O.	GAIN	13.	ο.	0.	0.	0.	0.	٠.	0.
UAN	-477.			-30.				-14.		
FEB	0.	GAIN	16.	0.	0. -1.	0.	0.	0. -12.	.0	0. 0.
	-392.	LOSS		-26.						
MAR	1.	GAIN	20.	0.	0.	0.	3.	0. -11.	0. -347	1. 0.
	-326.	LOSS		-22.	-1.					
ΔDR	19.	GAIN	20.	0.	0.	0.	11.	0.	2.	7.
****	-142.			-14.	-1.	0.	-30.	-7.	-203.	0.
WAV	64.	GATN	22.	0.	0.		20.	0.	4.	26.
MAI	-27.	LOSS	22.	-6.	0.	0.	-12.	-4.	-111.	0.
	000	CATN	23	1	0.	٥.	31.	1.	13. -45.	124.
JUN	220. 0.		23.	-2.	0.	0.	-4.	-2.	-45.	0.
JUL	330.	CAIN	23.	3.	0.	0.	42.	2.	34. -25.	175.
201		LOSS	20.	-1.	0.	0.	-2.	-1.	-25.	0.
ATIC	301.	CATN	20.	2.	0.	0.			24.	169.
AUG		LOSS		-1.	o. o.	0.	-2.	-1.	-27.	0.
CED	168.	GAIN	17.	0.	o. o.	0.	21.	1.	14.	97.
SEF	-33.		_,,	-5.	0.	0.	-11.	-3.	-84.	0.
OCT	24.	GAIN	15.	0.	0. -1.	0.	6.	0.	2.	12.
001	-131.			-14.	-1.	0.	-31.	-6.	-184.	0.
NOV	2.	GAIN	12.	0.	0. -1.	0.	2.		0.	
1101	-246.	LOSS		-20.	-1.	0.	-55.	-9.	-271.	0.
DEC	0.	GAIN	12.	0.	0.	0.	0.	0.	0.	0.
220	-467.			-31.	-1.	0.	-96.	-14.	-427.	0.
тот	1129.	GAIN	215.	6.	0.	0.	173.	4.	92.	612.
101	-2243.	LOSS		-169.	-8.	0.	-470.	-84.	-2547.	υ.
									TEMP OF	MD 2
MAX	HEATING	LOAD=	-145	4453.	BTUH ON BTUH ON	DEC 18	HOUR 18	AME AME	SIENT TE	MP 3. MP 86.
MAX	COOLING	LOAD:	= 69	1200.	DION ON					

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651.I

BLDG 651 - BARRACKS WITH A/C - BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	NAL S ERATU	RE F	DAY		COIN- CIDENT AMBT.		PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	72.	73.	72.	4 31	18	3 61.	8.24	5.11	2.94	71.34
FEB	72.	76.	72.	9 28	24	4 66.	7.44	4.62	2.65	64.44
MAR	72.	77.	72.	24 28			8.24	5.11	2.94	71.34
APR	73.	77.	72.	6 2	2		7.97	4.95	3.15	69.35
MAY	75.	78.	72.	21 24		1 65.	8.24	5.11	3.87	72.27
JUN	76.	79.	72.	3 17	2	_	7.97	4.95	5.16	71.36
JUL	76.	78.	74.	28 10	. 1	8 90. 5 57.	8.24	5.11	5.70	74.10
AUG	76.	77.	72.	16	5 1	5 72. 9 63.	8.24	5.11	4.95	73.35
SEP	75.	79.	72.	4	ļ.	7 67. 0 68.	7.97	4.95	4.15	70.35
OCT	73.	77.	72.	1	L 2	2 65.	8.24	5.11	3.50	71.91
NOV	72.	77.		7	7 2	22 67. 15 68.	7.97	4.95	3.05	69.24
DEC	72.	72.		31	1 2	24 42. L5 70.	8.24	5.11	2.94	71.34
YEAR			12.	23	ا. ر	.5 70.	97.00	60.18	45.01	850.39

BLDG 651 - BARRACKS WITH A/C - BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	LOADS WER	HOURS WHEN E NOT MET OOLING	MAXIMUM BTU HEATING	
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	735 655 652 403 141 0 0 5 160 446 601 744 4542	744 672 744 720 744 720 744 720 744 720 744 8760	0 0 1 3 0 0 0 0 3 6 4 3 20	0 0 0 0 0 1 32 1 4 0 0	1291E+07 1223E+07 1271E+07 7621E+06 4283E+06 .0000 .0000 1491E+06 3828E+06 6245E+06 9122E+06 1454E+07 1454E+07	.8912E+06 .5088E+06 .2689E+06

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	684.72	.00	8.24	5.11	2.03	71.34	26.9
FEB	574.36	.00	7.44	4.62	1.84	64.44	26.9
MAR	502.67	.08	8.24	5.11	2.03	71.34	42.5
APR	249.35	1.09	7.97	4.95	2.02	69.35	46.3
MAY	63.23	3.42	8.24	5.11	2.20	72.27	58.0
JUN	.00	11.12	7.97	4.95	2.39	71.36	76.6
JUL	.00	16.89	8.24	5.11	2.55	74.10	77.1
AUG	1.62	15.18	8.24	5.11	2.42	73.35	76.7
SEP	74.74	8.45	7.97	4.95	2.21	70.35	76.9
OCT	246.77	1.31	8.24	5.11	2.13	71.91	52.5
NOV	404.71	.11	7.97	4.95	2.00	69.24	40.2
DEC	676.28	.00	8.24	5.11	2.03	71.34	26.9
YEAR	3478.46	57.64	97.00	60.18	25.86	850.39	77.1

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 101369. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651.I BLDG 651 - BARRACKS WITH A/C - BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

:	SURF. BTU/ SQFT-	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1291E+07
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	1223E+07
MAR	1864.	1216.	1.000	43.	0.	Ο.	0	0	.2934E+06	1271E+07
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.3959E+06	7621E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.5982E+06	4283E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.8912E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8912E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.8912E+06	1491E+06
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.8912E+06	3828E+06
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.5088E+06	6245E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2689E+06	9122E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	1454E+07

BLDG 651 - BARRACKS WITH A/C - NIGHT SETBACK (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 3
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000

LAST CASE FLAG (1=YES 0=NO) (LSTCS) 1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK*****
 FILE NAME MO
                             YEAR 1955
 STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.0000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.00000 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01 SOLAR REFLECTANCE OF GROUND (RHOG) 2.00000E-01 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
 FLOOR AREA (SQFT) 40986.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -891200.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 3167.000000
 INFILTRATION PROFILE
                                    .670
                                                                                                                .670
                                                                                                                                     .670
                                                                                               .670
                                                                            .670
                                                         .670
                  .670
   .670
                                                                           1.00
                                                                                              1.00
   1.00 1.00 1.00 1.00
                                                                                                                1.00
                                                                                                                                    1.00
                                                                           .670
                                                                                             .670 .670
                                                                                                                                   .670
                                      .670
                                                         .670
                   1.00
   1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 4.350000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 231200.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 47.000000
WINDOW GLASS NUMBER (NG) 30
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
 WALL DATA
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 8613.0 1828.0 8541.0 1826.0
WINDOW AREA SQFT (AWND) 435.0 18.5 467.0 17.2
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 43.5 1.9 46.7 1.7
WIDTH OF OVERHANG (WOH) 2.5 2.5 2.5 2.5
OVERHANG HGT ABV WNDW(HOH) 1.0 1.0 1.0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.194	.193	.194	.194	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	01454	.01447	.01454	.01454	
CN FACTORS NUMBER OF BU FACTORS (NB	5	5	5	5	
NUMBER OF BN FACTORS (ND	•				
N=1	.00002	.00002	.00002	.00002	
N=2	.00224	.00223	.00224	.00224	
N=3	.00805	.00801	.00805	.00805	
N=4	.00394	.00392	000394	.00029	
N=5	.00029	.00029	*****	*****	
N=6	*******	5	5	5	
NUMBER OF DN FACTORS (ND)	5	3	•		
DI 111010111	1.00000	1.00000	1.00000	1.00000	
N=1	-1.50943	-1.50943	-1.50943	-1.50943	
N=2 N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N=6	*****	*****	*****	****	
ROOF AREA SQFT (AROF) 13662 ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNF	F) 7.10	0000E-02	•		
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	1.1779	955E-03			
ROOF B TRANSFER FUNCTIONS (BNF	4007.03	4028-04	906		
.000 .121E-03 .613E-03	.403E-03	.4036-04	800.		
ROOF D TRANSFER FUNCTIONS (DNF 1.00 -1.46 .533	() 611F_01	820E-03	999.		
TOUR MITH DECDEES (TITLE)		ルスキいい			
SKYLIGHT TILT DEGREES (IIII) SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	0000		
AVVITOUR UPICUR BY ISKNI U.	UUUUUUETU	<i>J</i>			
SEVITCHT WIDTH FT (SKW) 0.0)00000E+00				
CVVITCUT OVERBANG WILLIN ET 15F	COW I U . I				
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH) 0.0000	00E+00		
	1				
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	(SHSK)	0.000000E+0	JU 1	1	
SUMMER START MONTH AND DAY FOR	R SHSK (MS:	E, NDST)	1	1	
SUMMER END MONTH AND DAY FOR S	O OOOOOO	רטט (ל מאמא	-	_	
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	ID-F (SKYII	1 1.	292998		
NICHE SKI LIGHT U BIO/SQLI I	T-HR-F (SK)	YUN)	1.292998		
FRACTION OF PROCESS HEAT TO IN	TERNAL SP	ACE (FAP)	4.300000)E-01	
TO THE PERSON OF THE PROPERTY	、ロイトロ				56.0
76.0 76.0 76.0	76.0	76.0	76.0	76.0	76.0
					76.0
76.0 76.0 76.0	76.0	76.0	76.0	76.0	76.0
	56.0	76.0	76.0	76.0	76.0
76.0 76.0 76.0	76.0	76.0	78.0	70.0	, 0.0
THE TAX THE PROCESS DO	יייי ייי				
WEEKEND HEATING THERMOSTAT PRO	70.0	70.0	70.0	70.0	70.0
70.0 70.0 70.0	70.0	, 5 . 5			
70.0 70.0 70.0	70.0	70.0	70.0	70.0	70.0
,0.0 ,0.0					
70.0 70.0 70.0	70.0	70.0	70.0	70.0	70.0
•					

INTERNAL	GAINS	AND	PROFILES	
11121111				THERMOSTAT SET
				POINT DEG F
KW B	TU/HR -			

PEOPLE PEOPLE

LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

PEAK VAL	24.	47268.	84150.	39270.			
HOUR	HOU	RLY FRACT	ION OF PEA	ж			
1	.200	.000		1.000	70.0		
2	.200	.000	1.000	1.000	70.0	76.0	
3	000	000	1 000	1 000	70.0	76.0	
4	.200	.000	1.000 1.000 1.000 1.000 .800	1.000	70.0	76.0	
5	400	- 000	1.000	1.000	70.0	76.0	
6	.800	.000	1.000 .800 .400	1.000	70.0		
7	1.000	.000	.800	.800	70.0	76.0	
8					70.0	76.0	
9	.200	.000	.100 .100 .100	. 100	70.0	76.0	
10	.200	.000	.100	.100	70.0		
11	.200	.000	.100	.100	70.0 70.0	76.0	
12	. 200	.000	.100	.100			
13	.200	.000	.100 .100 .100	.100			
14	.200	.000	.100	.100	70.0	76.0	
15	.200	.000	.100	. 100	70.0		
16	.400	.000	.300 .800	.300			
17	.800	.300	.800	.800	70.0	76.0	
18	1.000	.300	.800	.800	70.0	76.	
19	1.000	.300	.800 .500	.800 .500	70.0	76.	
20	1.000 1.000	.300	.500	.500	70.0 70.0	76.	
21	1.000	.300	.800	.800	70.0		
22	.800 .200	.000	.800 1.000	1.000	70.0	76.	
23	.200	.000	1.000	1.000	70.0 70.0	76. 76.	
		.000	1.000	1.000	70.0	76.	U
	THE PROPERTY	TENT TEMP	. OF (THLK	OT) 6	8.000000		
				OT) 6	8.000000		
SYSTEM T	YPE, (IECN) IR CFM (SACF		9				
SUPPLY A	IR CFM (SACE	'M) 2714	8.000000				
ECONOMIZ	ER HIGH TEME UPPLY AIR ST UPPLY AIR ST	LIMIT F	65.0	00000			
SYSTEM S	UPPLY AIR ST	ART TIME	HR 0.00	0000E+00			
SYSTEM S	UPPLY AIR ST	OP TIME H	IR 24	.000000			
CVCTTM M	אירי אדע חשעדו	IP ('I'MXAIR)	55.0	00000	000= 01		
MIN OUTS	SIDE AIR FRAC	TION OF 2	MCFM (OAFA	1.000	000F-01		
प्रमास अवस	CIENCY (EFA)	1) 5.50	0000E-01				
FAN TOTA	L PRESSURE	N. WATER	(DP) 8	.000000E-0	1		
VAV TYPE	(IVAV)	1	/	0 5000	00E-01		
VAV MINI	MUM SUPPLY	IR FRACT	ON (ARMIN)	2.5000	00E-01		
VAV COLE	DECK TEMPE	RATURE F	(TCD)	58.0000	.00		
VAV FAN	PART LOAD FA	ACTORS	.560			.400	.700
.000	.560	.200	.560	.300	.020	. 400	•,
		600	020	.700	.880	.800	.930
.500	.770	.600	.830	. 700	.000		
		1 00	1 00				
.900	.980	1.00	1.00	1700000 00	0000		
HEATING	PLANT RATED	OUTPUT B	TO (HPLOT)	2125000 00	0000		
HEATING	PLANT RATED	INPUT BT	OF THEFTH	ZIZSOUU.UU	л.н.)		
	PLANT PART	LOAD VS F	RAC OF INPO	.300	369	.400	.451
.100	.191	.200	.286	.300	.507		
	F 2 F	600	.625	700	.718	.800	.812
.500	.537	.600	.025	.700	.,20		
	006	1 00	1.00				
.900			0				
CHILLER	TYPE (ITYPC PLANT RATED	n)	ייני (כיבורייו)	892000.0	000000		
COOLING	PLANT RATED	OUTLOT D	I (CFIOI)	164905.00	00000		
COOLING	PLANT PART	TNEOT DE	We EDAC D				
	PLANT PART	.200	.250	.300	.310	.400	.370
.100	.200	. 200	.230	.550			
E00	.450	600	. 550	.700	.650	.800	.760
.500	.450	.000	. 550				
800	.880	1.00	1.00				
.900	.000	1.00	1.00				

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-2.I BLDG 651 - BARRACKS WITH A/C - NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITN DOOR AND				VENT AND	
MATERIA	LOAD		WINDOW	ROOF	OT ND	BSMT	WALL	WINDOW	INFL	LATENT
TAN	LOAD 0.	GAIN	13.	0.	0.	0.	0.	0.	0.	0.
OPM	-435.	LOSS		-28.	0. -1.					
FEB	0.	GAIN	16.	0.	0. -1.	0.	0.	0.	0.	o. o.
	-355.	LOSS		-25.						
MAR	1.	GAIN	20.	0.	0.	0.	4.	0. -10.	0.	0.
		LOSS		-21.						
A DD	18.	GAIN	20.	0.	0.	0.	12.	0.	3.	7.
ALK		LOSS			0. -1.					
MAV	63.	GAIN	22.	0.	0.	0.	21.	0.	5.	26.
IIII	-18.	LOSS		-6.	0.	0.	-11.	-3.	-105.	0.
JUN	220.	CAIN	23.	1.	0.	0.	31.	1.	13.	124.
JUN	0.		201	-2.	0.	0.	-4.			
JUL	330.	CATN	23.	3.	0.	0.	42.	2.	34. -25.	175.
001	0.	LOSS			o. o.					
AUG	301.	GAIN	20.	2.	o. o.	0.	36.	1.	24.	169.
AUG	0.	LOSS							-27.	
SEP	167.	GAIN	17.	0.	0. 0.	0.	22.	1.	14.	97.
DLI	-22.									
ОСТ	24.	GAIN	15.	0.	0. -1.	0.	7.	0.	2.	11.
001	-106.									
NOV	2.	GAIN	12.	0. -19.	0. -1.	0.	2.	0.	0.	1.
	-214.	LOSS								
DEC	٥.	GAIN	12.	0.	0.	0.	0.	0.	0.	0.
					0. -1.					
тот	1125.	GAIN	215.	6.	0.	0.	177.	4.	94.	611.
101	-1981.			-159.	-8.	0.	-433.	-79.	-2349.	0.
	TIES MING	T () N D -	1394	5149	BTUH ON 1	DEC 18	HOUR 9	AME 6	BIENT TE	MP 3.
MAX	COOLING	TOWD=	130t 130t	1200.	BTUH ON	SEP 2	HOUR 18	AME	BIENT TE	MP 86.
LIUV	COULING									

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-2.I BLDG 651 - BARRACKS WITH A/C - NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTER	RNAL S PERATU MAX		DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	72.	70.	4 31	18 24		8.24	5.11	2.94	71.34
FEB	70.	75.	70.	9 28	24	_	7.44	4.62	2.65	64.44
MAR	70.	77.	70.	24 31	_	_	8.24	5.11	2.94	71.34
APR	72.	77.	70.	6 29		2 65. 8 61.	7.97	4.95	3.15	69.35
MAY	74.	78.	70.	21 24		1 65. 0 61.	8.24	5.11	3.86	72.26
JUN	76.	79.	72.	3 17		2 65. 7 61.	7.97	4.95	5.16	71.36
JUL	76.	78.	74.	28 10		8 90. 5 57.	8.24	5.11	5.70	74.10
AUG	76.	77.	70.	16 25		5 72. 9 63.	8.24	5.11	4.94	73.35
SEP	74.	79.	70.	4 30		7 67. 4 51.	7.97	4.95	4.16	70.35
OCT	72.	77.	70.	1 31		2 65. 4 44.	8.24	5.11	3.45	71.86
NOV	71.	77.	70.	. 30	_	2 67. 4 27.	7.97	4.95	3.06	69.25
DEC	70.	70.	70.	23		7 62. 4 42.	8.24	5.11	2.94	71.34
YEAR							97.00	60.18	44.96	850.34

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-2.I BLDG 651 - BARRACKS WITH A/C - NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	LOADS WERE	OURS WHEN NOT MET	MAXIMUM BTU HEATING	
JAN	723	7 44 672	0	0	1222E+07 1153E+07	.0000
FEB MAR	650 634	744	Ō	0	1199E+07 7024E+06	.2943E+06
APR MAY	370 101	720 744	0	0	3775E+06	.5982E+06
JUN JUL	0	720 744	0 0	1 32	.0000	.8912E+06
AUG	Ō	744 720	0	1 4	.0000 3339E+06	.8912E+06 .8912E+06
SEP OCT	127 411	744	Ö	0	5682E+06	.5090E+06
NOV DEC	542 739	720 744	0	Ō	1386E+07	.0000 .8912E+06
YEAR	4297	8760	0	38	1386E+07	. OFIZETOO

SYSTEM TOTALS

		ENERG	Y CONSUMPT		TAL INTERNAL	MAXIMUM	
	HEATING	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH	MILLION BTU	KWH	KWH	BTU	KWH	BTU	KW
JAN	633.73	.00	8.24	5.11	2.03	71.34	26.9
FEB	532.92	.00	7.44	4.62	1.84	64.44	26.9
MAR	459.57	.06	8.24	5.11	2.03	71.34	42.3
APR	216.49	1.02	7.97	4.95	2.02	69.35	46.4
MAY	44.65	3.35	8.24	5.11	2.20	72.26	58.0
JUN	.00	11.12	7.97	4.95	2.39	71.36	76.6
JUL	.00	16.89	8.24	5.11	2.55	74.10	77.1
AUG	.00	15.17	8.24	5.11	2.42	73.35	76.7
SEP	56.92	8.41	7.97	4.95	2.21	70.35	76.9
OCT	215.15	1.27	8.24	5.11	2.12	71.86	52.5
NOV	359.92	.10	7.97	4.95	2.00	69.25	40.2
DEC	631.31	.00	8.24	5.11	2.03	71.34	26.9
YEAR	3150.66	57.38	97.00	60.18	25.85	850.34	77.1

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 93349. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-2.I BLDG 651 - BARRACKS WITH A/C - NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1222E+07
FEB	1421.	901.	1.000	37.	0.	ο.	0	0	.0000	1153E+07
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.2943E+06	1199E+07
APR	2242.	1552.	1.000	55.	0.	Ο.	0	0	.3724E+06	7024E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.5982E+06	3775E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.8912E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	ο.	0	0	.8912E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.8912E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.8912E+06	3339E+06
OCT	1394.	924.	1.000	57.	0.	Ο.	0	0	.5090E+06	5682E+06
NOV	1008.	710.	1.000	47.	0.	ο.	0	0	.2693E+06	8498E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	1386E+07

BLDG 651 - BARRACKS WITH A/C - DDC (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

LAST CASE FLAG (1=YES, 0=NO) (LSTCS)

SKY CLEARNESS FACTOR (CLN) 9.700000E-01

NUMBER OF ZONES (NZ)

1.000000
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)

0
----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                                                    YEAR 1955
 STATION 13995
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALDIA)
 SITE LATITUDE DEG (AL1) 37.750000
AMPLITUDE OF GROUND TEMP SWING DEG F

SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

INITIAL TEMP OF AIR IN BUILDING DEG F

INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

YOULDE OF ZONE IN CURIC FEET (VOLUS)

A37184 000000
  VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
  FLOOR AREA (SQFT) 40986.000000
  HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -891200.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
  CONSTANT INFILTRATION RATE CFM (CFMI) 3167.000000
  INFILTRATION PROFILE
                                                                 .670 .670 .670
                                                                                                                                                                                                      .670
                                                                                                                                                                     .670
                        .670
                                                                                                                                                                     1.00
      1.00 1.00 1.00 1.00
                                                                                                                                                                                                       1.00
                                                                                                                                                                                                                                        1.00
                                                                                                                                  1.00
                                                                                                                                                                     .670
                                                                                                                                                                                                    .670
                                                                                                                                      .670
                                                                                                                                                                                                                                        .670
                                                                                                    .670
                                                                    .670
                                  1.00
      1.00
  A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

231200.000000
   BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
   PARTITION UA BTU/HR-F (GUA)

DOOR UA BTU/HR-F (DUA)

WINDOW GLASS NUMBER (NG)

0.000000E+00

47.000000

30
   DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
    WINDOW SHADING FACTOR (SHD) 5.900000E-01
  WALL DATA

WALL NUMBER

AZIMUTH ANGLE (AZ)

WALL AREA SQFT (AWLL)

WINDOW AREA SQFT (AWND)

WINDOW HEIGHT FT (WNDH)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH ABV WNDW(HOH)

1.0

WALL DATA

1 2 3 4

4.0

90.00

180.00

-90.00

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726

1726
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .194	120.0 .193	120.0 .194	120.0 .194			
CN FACTORS	.01454	.01447	.01454	.01454			
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00002	.00002	.00002	.00002			
N=2 N=3	.00224	.00801	.00805	.00805			
N=4 N=5 N=6	.00029	.00029	.00029 *****	.00029			
NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	1 00000			
N=1 N=2	1.00000	1.00000 -1.50943	-1.50943 65654	-1.50943 -65654			
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	07415	07415	07415 .00212	07415 .00212			
N=5 N=6 ROOF AREA SQFT (AROF) 13662	******	*****	*****	*****			
ROOF AREA SQFT (AROF) 13662.0000000 ROOF U VALUE BTU/HR-SQFT-F (URF) 7.100000E-02 ROOF TRANS FUNCTIONS USED (1=YES, 0=NO) (IROOF) 1 ROOF C TRANSFER FUNCTION (CNR) 1.177955E-03 ROOF B TRANSFER FUNCTIONS (BNR) ROOF B TRANSFER FUNCTIONS (BNR)							
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR .000 .121E-03 .613E-03	1.17/9) _403E-03	.403E-04	806.				
ROOF D TRANSFER FUNCTIONS (DNR) 611E-01	.820E-03					
SKYLIGHT TILT DEGREES (TILT)	(AZSK)	9999.000					
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	COUCUETUU						
SKYLIGHT WIDTH FI (SKW) SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT SKYLIGHT GLASS NUMBER (NS)							
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR	SHSK) (MS').000000E+C r,ndst) vDND)	00 1 1	1			
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H	0.000000E R-F (SKYU	1.	.292998				
SUMMER END MONTH AND DAY FOR SHSK (MND, NDND) SKY LIGHT AREA SQFT (ASKY) 0.000000E+00 DAYTIME SKY LIGHT U BTU/SQFT-HR-F (SKYU) 1.292998 NIGHT TIME SKYLIGHT U BTU/SQFT-HR-F (SKYUN) 1.292998 FRACTION OF PROCESS HEAT TO INTERNAL SPACE (FAP) 4.300000E-01							

------INTERNAL GAINS AND PROFILES -----THERMOSTAT_SET

THERMOSTAT SET POINT DEG F

	KW -		BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	ENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	24.	47268.	84150.	39270.		
HOUR		URLY FRACT	ION OF PE	AK		
1001	.200	.000	1.000	1.000	68.0	78.0
1	.200	.000	1.000	1.000	68.0	78.0
2		.000	1.000	1.000	68.0	78.0
3	.200	.000	1.000	1.000	68.0	78.0
4	.200		1.000	1.000	68.0	78.0
5	.400	.000	1.000	1.000	68.0	78.0
6	.800	.000		.800	68.0	78.0
7	1.000	.000	.800		68.0	78.0
8	.200	.000	.400	.400	68.0	78.0
9	.200	.000	.100	.100		78.0
10	.200	.000	.100	.100	68.0	
11	.200	.000	.100	.100	68.0	78.0
12	.200	.000	.100	.100	68.0	78.0

```
78.0
                               .100
                                           .100
                                                       68.0
                      .000
            .200
 13
                                                                  78.0
                                                      68.0
                                .100
                      .000
                                           .100
            .200
 14
                                                      68.0
                                                                  78.0
                      .000
                                .100
                                           .100
           .200
 15
                                           .300
                               .300
.800
.800
                                                      68.0
                                                                  78.0
                      .000
           .400
  16
                                                                  78.0
                                           .800
                                                      68.0
            .800
                      .300
  17
                                                      68.0
                                          .800
                                                                  78.0
                      .300
            1.000
  18
                                .500
                                                      68.0
                                                                  78.0
                                          .500
                      .300
  19
            1.000
                                                      68.0
                                          .500
                                                                  78.0
                      .300
                               .500
.800
            1.000
  20
                                          .800
                                                      68.0
                                                                  78.0
                      .300
            1.000
  21
                                                                  78.0
                                1.000
                                          1.000
                                                      68.0
            .800
                      .000
  22
                                                      68.0
                                       1.000
1.000
            .200
                      .000
                                1.000
  23
                                                      68.0
                                                                  78.0
                      .000
                                1.000
             .200
 24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000 NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 68.000000
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM) 27148.000000
ECONOMIZER HIGH TEMP LIMIT F 65.000000
                                  0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
                                      8.000000E-01
VAV TYPE (IVAV)
VAV TYPE (IVAV)
VAV MINIMUM SUPPLY AIR FRACTION (ARMIN)
2.5000000
58.000000
                                          2.500000E-01
VAV COLD DECK TEMPERATURE F (TCD)
VAV FAN PART LOAD FACTORS
                                                                        .700
                                                              .400
                               .560 .300
                                                    .620
                   .200
           .560
 -000
                                                              .800
                                                                        .930
                                         .700
                                                   .880
           .770 .600
                               .830
 .500
                               1.00
 .900
                     1.00
           .980
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1700000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2125000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                              .400
                                                                        .451
                               .286 .300
                                                 .369
                    .200
           .191
 .100
                                                              .800
                                                                        .812
                                                   .718
                      .600
                                .625
                                          .700
            .537
 .500
                                1.00
                     1.00
           .906
  .900
CHILLER TYPE (ITYPCH)
                                0
COOLING PLANT RATED OUTPUT BTU (CFLOT) 892000.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 164905.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                        .370
                                                              .400
                                        .300
                                                 .310
                                .250
                     .200
           .200
  .100
                                     .700 .650
                                                              .800
                                                                        .760
                   .600
                                .550
           .450
  .500
  .900
          .880 1.00
                                1.00
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-1.I

BLDG 651 - BARRACKS WITH A/C - DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH	LOAD		SOLAR THRU WINDOW	ROOF	PARTITI DOOR AND SLAB	BSMT	WALL	WINDOW	VENT AND INFL O.	LATENT
JAN		GAIN LOSS	13.	0. -27.	-1.			-13.	-377.	0.
FEB		GAIN LOSS	16.	0. -23.	0. -1.	0. 0.	1. -62.	0. -11.	0. -321.	0. 0.
MAR	0. -251.	GAIN LOSS	20.	0. -20.	0. -1.		5. -49.	0. -10.	0. -290.	0. 0.
APR	13. -96.	GAIN LOSS	20.	0. -12.	0. -1.	0. 0.	12. -24.	0. -6.	3. -172.	5. 0.
MAY	52. -11.	GAIN LOSS	22.	0. -6.	o. o.	0. 0.	19. -12.	0. -4.	3. -108.	22.
JUN	201.		23.	0. -3.		0.	27. -6.	0. -2.	8. -54.	116.
JUL	304. 0.	GAIN LOSS	23.	2. -1.		0. 0.	38. -3.	1. -1.	25. -32.	166. 0.
AUG	277. 0.		20.	1. -1.	o. o.	0.	31. -3.	1. -2.	17. -35.	160. O.
SEP	151. -13.		17.	0. -5.	0. 0.	0. 0.	20. -10.	1. -3.	11. -78.	91. 0.
OCT	19. -83.	GAIN LOSS	15.	0. -12.	0. -1.	o. o.	7. -26.	0. -5.	3. -152.	10. 0.
NOV	1. -185.		12.	0. -18.	0. -1.	0. 0.	2. -46.	0. -8.	0. -224.	
DEC	0. -384.	GAIN LOSS	12.	0. -28.	0. -1.	0. 0.	0. -83.	0. -12.	0. -361.	0. 0.
TOT	1018. -1733.	GAIN LOSS	215.	3. -154.	0. -7.	o. o.	163. -407.	3. -76.	71. -2203.	570. 0.
MAX MAX	HEATING COOLING	LOAD=	= -131 = 89	8573. 1200.	BTUH ON BTUH ON	DEC 18 JUL 28	HOUR 9	AME AME	SIENT TE	MP 3. MP 90.

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-1.I BLDG 651 - BARRACKS WITH A/C - DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATU MAX	JRE F	DAY 1		IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	68.	72.	68.	4 31	18 24	61. 33.	8.24	5.11	2.94	71.34
FEB	68.	74.	68.	9 28	24 24	66. 34.	7.44	4.62	2.65	64.44
MAR	69.	78.	68.	24 31	22 24	68. 32.	8.24	5.11	2.94	71.34
APR	71.	79.	68.	30 29	22 8	67. 61.	7.97	4.95	2.91	69.10
MAY	75.	79.	68.	26 23	22 11	66. 61.	8.24	5.11	3.55	71.95
JUN	78.	80.	73.	3 17	22 7	65. 61.	7.97	4.95	4.52	70.71
JUL	78.	79.	76.	30 10	8 5	75. 57.	8.24	5.11	4.78	73.19
AUG	78.	79.	71.	1 25	11 9	75. 63.	8.24	5.11	4.26	72.66
SEP	75.	80.	68.	4 30	1 24	67. 51.	7.97	4.95	3.74	69.94
OCT	71.	. 79.	68.	15 31	11 24	71. 44.	8.24	5.11	3.28	71.68
NOV	69.	. 79.	68.	. 30	22 24	67. 27.	7.97	4.95	2.93	69.12
DEC	68.	. 69.	68.	23 . 31	17 24	62. 42.	8.24	5.11	2.94	71.34
YEAR							97.00	60.18	41.44	846.82

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-1.I

BLDG 651 - BARRACKS WITH A/C - DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	140110211 0	HOURS WHE E NOT MET COLING	N MAXIMUM BTU HEATING	
JAN	704	744	0	0	1152E+07	.0000
FEB	645	672	0	0	1083E+07	.3214E+06
MAR	613	744	0	0	1128E+07	.3954E+06
APR	329	720	0	0	3275E+06	.5514E+06
MAY	74	744 720	Ö	ő	.0000	.8544E+06
JUN	0	744	Ö	16	.0000	.8912E+06
JUL AUG	0	744	Ö	0	.0000	.8634E+06
SEP	84	720	0	0	2893E+06	.8816E+06
OCT	367	744	0	0	5125E+06	.4615E+06
NOV	501	720	0	0	7881E+06 1319E+07	.0000
DEC	732	744	0	0 16	1319E+07	.8912E+06
YEAR	4049	8760	0	16	1313E+01	.07121.00

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-1.I

SYSTEM TOTALS

			Y CONSUMPT	TO FANS	OTAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC	
MONTH	HEATING MILLION BTU	COOLING THOUSAND KWH	THOUSAND KWH	PROCESS MILLION BTU	THOUSAND KWH	MILLION BTU	DEMAND KW
JAN	586.61	.00	8.24	5.11	2.03	71.34	26.9
FEB	493.10	.00	7.44	4.62	1.84	64.44	26.9
MAR	417.73	.02	8.24	5.11	2.03	71.34	26.9
APR	183.37	.73	7.97	4.95	1.98	69.10	46.8
MAY	32.05	2.80	8.24	5.11	2.14	71.95	55.2
JUN	.00	10.08	7.97	4.95	2.26	70.71	73.9
JUL	.00	15.46	8.24	5.11	2.39	73.19	77.0
AUG	.00	13.91	8.24	5.11	2.28	72.66	74.6
SEP	35.38	7.55	7.97	4.95	2.13	69.94	75.8
OCT	181.05	1.01	8.24	5.11	2.09	71.68	50.0
NOV	318.29	.07	7.97	4.95	1.98	69.12	40.9
DEC	585.32	.00	8.24	5.11	2.03	71.34	26.9
YEAR	2832.90	51.62	97.00	60.18	25.20	846.82	77.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 85062. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-1.I

BLDG 651 - BARRACKS WITH A/C - DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1152E+07
FEB	1421.	901.	1.000	37.	0.	Ο.	0	0	.0000	1083E+07
MAR	1864.	1216.	1.000	43.	0.	Ο.	0	0	.3214E+06	1128E+07
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.3954E+06	6438E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.5514E+06	3275E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.8544E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8912E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.8634E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.8816E+06	2893E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.4615E+06	5125E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2785E+06	7881E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	1319E+07

BLDG 651 - BARRACKS WITH A/C - ECONOMIZER (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
 NUMBER OF ZONES (NZ)
 NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
  ----- SITE AND BUILDING DATA -----
  *****REAL WEATHER FROM DISK*****
   FILE NAME MO
  STATION 13995
                                                      YEAR 1955
  SITE LATITUDE DEG (AL1) 37.750000
 ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000

SOLAR ABSORRELLITY OF WALLS (ALBUM)
 AMPLITUDE OF GROUND TEMP SWING DEG F (AMORN)

SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

TO.000000

INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000
  INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
  VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
   FLOOR AREA (SQFT) 40986.000000
  HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -891200.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
   CONSTANT INFILTRATION RATE CFM (CFMI) 3167.000000
   INFILTRATION PROFILE
                                                                   .670 .670 .670
                                                                                                                                                                                                         .670
                                                                                                                                                                                                                                             .670
                                                                                                                                                                          .670
                          .670
      1.00 1.00 1.00 1.00
                                                                                                                                        1.00
                                                                                                                                                                          1.00
                                                                                                                                                                                                              1.00
                                                                                                                                                                                                                                                1.00
                                                                                                                                                                          .670
                                                                                                                                                                                                             .670
                                                                                                                                                                                                                                                .670
                                                                                                                                          .670
                                                                                                       .670
                                                                      .670
                                   1.00
       1.00
  A FACTOR IN INFILTRATION EQUATION (CINA) 4.350000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 231200.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
   PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 47.000000
WINDOW GLASS NUMBER (NG) 30
    DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
    WINDOW SHADING FACTOR (SHD) 5.900000E-01
   WALL DATA

WALL NUMBER

AZIMUTH ANGLE (AZ)

WALL AREA SQFT (AWLL)

WINDOW AREA SQFT (AWND)

WINDOW HEIGHT FT (WNDH)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH ABV WNDW(HOH)

OVERHANG HGT ABV WNDW(HOH)

WALL DATA

1 2 3 4

4 2 3 4

4 2 3 4

1 90.00

180.00

-90.00

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

1826.0

18
```

MAX SOLAR WITH NO SHADE (SOLMX)	120.0	120.0	120.0	120.0
WALL TRANSFER FUNCTIONS			01454	01454
CN FACTORS	.01454	.01447	.01454	.01454
NUMBER OF BN FACTORS (NB	5	5	5	5
BN FACTORS BN (BN)		00000	00003	00002
N=1	.00002	.00002	00002	.00224
N=2	.00224	00223	00805	.00805
N=3	.00805	00301	.00394	.00394
N=4	.00394	000392	.00029	.00029
N=5	.00029	*****	*****	*****
N=6	* * * * * * * * * * * * * * * * * * *	5	5	5
U VALUE BTU/(HR-SQFT-F) (OW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	J	•	
	1 00000	1.00000	1.00000	1.00000
N=1	_1 50000	-1.50943	-1.50943	-1.50943
N=2	65654	65654	.65654	.65654
N=3	- 07415	07415	07415	07415
N=4	00212	.00212	.00212	.00212
N=5	******	*****	*****	*****
N=6 ROOF AREA SQFT (AROF) 13662	000000			
	TP 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0000E-02		
ROOF U VALUE BTU/HR-SQFT-F (UK ROOF TRANS FUNCTIONS USED (1=Y	FS O=NO)	(TROOF)	1	
ROOF C TRANSFER FUNCTIONS (CRN)	1 1779	55E-03		
ROOF C TRANSFER FUNCTION (CRK) ROOF B TRANSFER FUNCTIONS (BNR	1.1,,,			
ROOF B TRANSFER FUNCTIONS (BNR .000 .121E-03 .613E-03	1 403E-03	.403E-04	806.	
.000 .121E-US .015E COMP	.4052 05			
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.46 .533 SKYLIGHT TILT DEGREES (TILT)	611E-01	.820E-03	999.	
1.00 -1.46 .333	0.000000	E+00		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	0000	
evytteum urteum FT (SKH) 0.	000000E+00)		
OVULTOUR WIDTH ET (SKW) 0.0	100000E+00			
CVVIICUT OVERHANG WIDTH FT (SK	COW) U.U	J00000E-00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)) 0.0000	00E+00	
/NC\	7			
SKYLIGHT SHADING COEFFICIENT ((SHSK) (0.00000E+0	00	1
SUMMER START MONTH AND DAY FOR	R SHSK (MST	r, NDST)	1	1
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK (MND, 1	NDND)	1	
SKY LIGHT AREA SQFT (ASKY)	O.00000E	+00	000000	
DAYTIME SKY LIGHT U BTU/SQFT-F	IR-F (SKYU)) 1.	1 202000	
NIGHT TIME SKYLIGHT U BTU/SQFT	T-HR-F (SK	ANN)	T. 737338	ne_∩1
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	NTERNAL SPA	ACE (FAP)	4.30000	JE-OI

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

					IOINI D	
	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	24.	47268.	84150.			
HOUR	HO	URLY FRAC'	TION OF PE	EAK		
1	.200	.000	1.000	1.000	68.0	78.0
<u> </u>	.200	.000	1.000	1.000	68.0	78.0
2		.000	1.000	1.000	68.0	78.0
3	.200			1.000	68.0	78.0
4	.200	.000	1.000			78.0
5	.400	.000	1.000	1.000	68.0	
6	.800	.000	1.000	1.000	68.0	78.0
7	1.000	.000	.800	.800	68.0	78.0
-	.200	.000	.400	.400	68.0	78.0
8			.100	.100	68.0	78.0
9	.200	.000			68.0	78.0
10	.200	.000	.100	.100		
11	.200	.000	.100	.100	68.0	78.0
12	.200	.000	.100	.100	68.0	78.0

```
78.0
                                           .100
                                                       68.0
                       .000
                                 .100
             .200
 13
                                                                   78.0
                                                       68.0
                                 .100
                                           .100
            .200
                       .000
 14
                                                       68.0
                                                                   78.0
                       .000
                                 .100
                                           .100
            .200
 15
                                                                   78.0
                       .000
                                           .300
                                                       68.0
            .400
                                 .300
 16
                                                                   78.0
                                           .800
                                                       68.0
                                 .800
            .800
                       .300
 17
                                           .800
                                                       68.0
                                                                   78.0
                                .800
                       .300
           1.000
 18
                                                                   78.0
                                                       68.0
                       .300
                                          .500
                                .500
 19
            1.000
                                          .500
                                                                   78.0
                                .500
                                                       68.0
                       .300
            1.000
 20
                                          .800
                                                                   78.0
                                                       68.0
                       .300
                                .800
            1.000
  21
                                                                   78.0
                                          1.000
                                1.000
                                                       68.0
                       .000
            .800
  22
                                       1.000
1.000
                                                       68.0
            .200
                      .000
                                1.000
  23
                                                                   78.0
                                                        68.0
                               1.000
                       .000
             .200
 24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000 NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 68.000000
                          9
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM) 27148.000000
ECONOMIZER HIGH TEMP LIMIT F 68.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
                                   24.000000
SYSTEM SUPPLY AIR STOP TIME HR
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                             1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
                                       8.00000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
                          1
VAV TYPE (IVAV)
VAV TYPE (IVAV)

VAV MINIMUM SUPPLY AIR FRACTION (ARMIN)

2.5000000

58.000000
                                           2.500000E-01
VAV COLD DECK TEMPERATURE F (TCD)
VAV FAN PART LOAD FACTORS
                                                                         .700
                                         .300
                                                              .400
                                                    .620
                               .560
           .560
                    .200
 .000
                                                                         .930
                                          .700
                                                    .880
                                                               .800
                                .830
                      .600
 .500
           .770
                     1.00
                                1.00
            .980
 .900
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1700000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2125000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                   .369
                                                               .400
                                                                         .451
                                         .300
                               .286
                     .200
 .100
           .191
                                                               .800
                                                                         .812
                                          .700
                                                    .718
                                .625
                      .600
 .500
            .537
                                1.00
           .906
                      1.00
  .900
CHILLER TYPE (ITYPCH)
                                 0
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                         892000.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 164905.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                         .370
                                          .300
                                                     .310
                                                               .400
            .200
                     .200
                                .250
  .100
                                                               .800
                                                                         .760
                                         .700
                                                    .650
                                .550
  .500
                      .600
            .450
           .880
                      1.00
                                1.00
  .900
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-3.I

BLDG 651 - BARRACKS WITH A/C - ECONOMIZER (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD	GAIN	SOLAR THRU WINDOW 13.	ROOF	PARTITM DOOR AND SLAB 0. -1.	•	WALL 0.	WINDOW O.	VENT AND INFL 0.	LATENT O.
	-393.	LOSS		-27.	-1.	0.	-83.	-13.	-3//.	0.
	0.	GAIN LOSS	16.	0. -23.	0. -1.	o. o.	-62.	-11.	-321.	0.
MAR	0. -251.	GAIN LOSS	20.	0. -20.				0. -10.		0. 0.
APR	13. -96.	GAIN LOSS		0. -12.					3. -174.	
MAY	51. -11.		22.	0. -6.	0. 0.	0.	20. -12.	0. -4.	3. -111.	22. 0.
JUN	199. 0.		23.	0. -3.	0.	0. 0.	27. -5.	0. -2.	8. -60.	115. 0.
JUL	303. 0.	GAIN LOSS	23.	2. -1.	0.	0. 0.	38. -3.	1. -1.	25. -36.	165. 0.
AUG	276. 0.		20.	1. -1.	0.	0. 0.	31. -3.		17. -38.	
SEP	150. -13.	GAIN LOSS			0.			-3.	11. -82.	0.
OCT	19. -83.	GAIN LOSS	15.	0. -12.	0. -1.	o. o.	7. -25.	-5.	-155.	9. 0.
NOV	1. -185.		12.	0. -18.	-1.	0.		-8.	0. -226.	
DEC	0. -384.	GAIN LOSS	12.	-28.	-1.					
	1013. -1733.		215.	3. -154.	0. -7.	0. 0.	164. -406.	3. -76.	71. -2231.	566. O.
MAX MAX	HEATING COOLING	LOAD:	= -131 = 89	8573. 1200.	BTUH ON BTUH ON	DEC 18 JUL 28	HOUR 18	AME	BIENT TE BIENT TE	MP 3.

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-3.I

BLDG 651 - BARRACKS WITH A/C - ECONOMIZER (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATU MAX	JRE F	DAY	(OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	68.	72.	68.	4 31	18 24	61. 33.	8.24	5.11	2.94	71.34
FEB	68.	74.	68.	9 28	24 24	66. 34.	7.44	4.62	2.65	64.44
MAR	69.	79.	68.	24 31			8.24	5.11	2.94	71.34
APR	71.	79.	68.	27 29			7.97	4.95	2.87	69.06
MAY	75.	79.	68.	31 23			8.24	5.11	3.13	71.53
JUN	78.	79.	73.	6 17			7.97	4.95	3.45	69.65
JUL	78.	79.	76.	23 10			8.24	5.11	4.29	72.69
AUG	78.	80.	71.	24 25			8.24	5.11	3.82	72.22
SEP	75.	80.	68.	13 30			7.97	4.95	3.26	69.46
OCT	71.	79.	68.	6 31			8.24	5.11	2.96	71.36
NOV	69.	78.		٤	3 13		7.97	4.95	2.84	69.04
DEC	68.	. 69.		23	3 17	7 62.	8.24	5.11	2.94	71.34
YEAR					. -		97.00	60.18	38.09	843.47

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	1101122-1	HOURS WHEN	MAXIMUM BTU	J
MONTH	HEATING	ECONOMIZER		OOLING	HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	704 645 613 330 74 0 0 0 87 369 502 732 4056	744 672 744 720 744 720 744 720 744 8760	0 0 0 0 0 0 0 0	0 0 0 0 0 16 0 0 0	1152E+071083E+071128E+076437E+063275E+06 .0000 .00002893E+065125E+067881E+061319E+07	

SYSTEM TOTALS

		ENERG		TAL INTERNAL	MAXIMUM		
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW
JAN	586.61	.00	8.24	5.11	2.03	71.34	26.9
FEB	493.10	.00	7.44	4.62	1.84	64.44	26.9
MAR	418.14	.02	8.24	5.11	2.03	71.34	26.9
APR	184.21	.71	7.97	4.95	1.97	69.06	46.8
MAY	32.45	2.76	8.24	5.11	2.07	71.53	55.3
JUN	.00	10.02	7.97	4.95	2.10	69.65	73.9
JUL	.00	15.41	8.24	5.11	2.31	72.69	77.0
AUG	.00	13.89	8.24	5.11	2.22	72.22	74.6
SEP	37.01	7.51	7.97	4.95	2.06	69.46	75.8
OCT	182.23	.99	8.24	5.11	2.04	71.36	50.3
NOV	320.33	.07	7.97	4.95	1.97	69.04	40.7
DEC	585.32	.00	8.24	5.11	2.03	71.34	26.9
YEAR	2839.39	51.38	97.00	60.18	24.67	843.47	77.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 85156. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-3.I BLDG 651 - BARRACKS WITH A/C - ECONOMIZER (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. Di DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	٥.	0	0	.0000	1152E+07
FEB	1421.	901.	1.000	37.	0.	٥.	0	0	.0000	1083E+07
MAR	1864.	1216.	1.000	43.	0.	ο.	0	0	.3233E+06	1128E+07
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.3967E+06	6437E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.5536E+06	3275E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.8544E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	٥.	0	0	.8912E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.8634E+06	.0000
SEP	1800.	1330.	1.000	68.	0.	Ο.	0	0	.8817E+06	2893E+06
OCT	1394.	924.	1.000	57.	0.	٥.	0	0	.4693E+06	5125E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2762E+06	7881E+06
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	1319E+07

BLDG 651 - BARRACKS WITH A/C - DAYTIME OUTSIDE AIR (FT L. WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL CALLS
WEEKEND INTERNAL GAINS FACTOR (WKEND)
                                                                 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                                                 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK*****
 FILE NAME MO
                       YEAR 1955
 STATION 13995
                                          37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
 SITE LATITUDE DEG (AL1)
                                                                          20.000000
 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01 SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
FLOOR APER (SORT) 40006 0000000
                                                                      70.000000
                            40986.000000
 FLOOR AREA (SQFT)
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -891200.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
                                                          3167.000000
 CONSTANT INFILTRATION RATE CFM (CFMI)
 INFILTRATION PROFILE
                                                                                                     .000
                                                                          .000
                                                            .000
                                                                                         .000
                              .000
                                              .000
                .000
   .000
                                             .330 .330
                                                                                                      .330
                                                                         .330 .330
                             .330
   .330
                .330
                                             .000 .000 .000
                                                                                                     .000
                              .000
                .330
   .330
 A FACTOR IN INFILTRATION EQUATION (CINA) 4.350000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 231200.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
  PARTITION UA BTU/HR-F (GUA) 0.000000E+00
                                    47.00000
  DOOR UA BTU/HR-F (DUA)
  WINDOW GLASS NUMBER (NG)
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                                 WALL DATA
```

	MWTT DW	LA		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	8613.0	1828.0	8541.0	1826.0
WINDOW AREA SQFT (AWND)	435.0	18.5	467.0	17.2
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	43.5	1.9	46.7	1.7
	2.5	2.5	2.5	2.5
WIDTH OF OVERHANG (WOH)	1.0	1.0	1.0	1.0
OVERHANG HGT ABV WNDW(HOH)	1.0	1.0		

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .194	120.0 .193	120.0 .194	120.0 .194	
WALL TRANSFER FUNCTIONS CN FACTORS	.01454	.01447	.01454	.01454 5	
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00002	.00002	.00002	.00002	
N=1	.00224	.00223	.00224	.00224	
N=2	.00805	.00801	.00805	.00805	
N=3	.00394	.00392	.00394	.00394	
N=4	.00029	.00029	.00029	.00029	
N=2	****	*****	****	*****	
N=0 NUMBER OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS					
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000	
N=1	-1.50943	-1.50943	-1.50943	-1.50943	
N=2	.65654	.65654	.65654	.65654	
N=3	07415	07415	07415	07415	
N=4	.00212	.00212	.00212	.00212	
N=5	*****	*****	*****	*****	
ADEA CORE (ADOE) 13662	. 000000				
ROOF TRANS FUNCTIONS USED (1=Y	F) 7.10	0000E-02			
ROOF U VALUE BIU/ RE-SQFI I (OK	ES D=NO)	(TROOF)	1		
ROOF TRANS FUNCTIONS USED (1-1	1 1779	155E-03			
ROOF TRANSFER FUNCTION (CNR)	101111	332 00			
ROOF B TRANSFER FUNCTIONS (BNR .000 .121E-03 .613E-03	103E-03	403E-04	806.		
.000 .121E-03 .613E-03	.4U3E-U3	.4025 04	5551		
ROOF D TRANSFER FUNCTIONS (DNR	()	B30E-03	999		
1.00 -1.46 .533	011F-01	.0205-03	333.		
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.46 .533 SKYLIGHT TILT DEGREES (TILT)	0.000000	0000 000	000		
CTVT TCUT AVIMITIM ANIELE DELEKTIS	INGONI	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7000		
SKYLIGHT HEIGHT FT (SKH) U.	000000E+00	,			
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	100000E+00	00000E±00			
CENTICET OUTBHANG WIDTH FILLS	COW) U+		กกฐ+กก		
OVERHANG HEIGHT ABOVE SKYLIGHT					
SKYLIGHT GLASS NUMBER (NS)	, c c		10		
SKYLIGHT SHADING COEFFICIENT (SHOK) (MC	P. NIDETI	1	1	
SUMMER START MONTH AND DAY FOR	(SHSK (MS.	T'NDST'	1	1	
SUMMER END MONTH AND DAY FOR S	SHSK (MND,	ל מאמא ,	-	_	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOF SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT-H TO IN OF PROCESS HEAT TO IN	TO TO CERVIE	τοο \ 1	292998		
DAYTIME SKY LIGHT U BTU/SQFT-F	IK-F (DAIU	<i>)</i>	1 292998		
NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	THEOREM (SA)	VOR (EVD)	4.30000	0E-01	
FRACTION OF PROCESS HEAT TO IN	NIEKNAL SPI	ACE (FAF)	4.50000		

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

					FOIRT D	
	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	24.	47268.	84150.	39270.		
HOUR	HO	OURLY FRAC	TION OF PE	EAK		-c 0
1	.200	.000	1.000	1.000	72.0	76.0
2	.200	.000	1.000	1.000	72.0	76.0
3	.200	.000	1.000	1.000	72.0	76.0
4	.200	.000	1.000	1.000	72.0	76.0
5	.400	.000	1.000	1.000	72.0	76.0
6	.800	.000	1.000	1.000	72.0	76.0
7	1.000	.000	.800	.800	72.0	76.0
8	.200	.000	.400	.400	72.0	76.0
9	.200	.000	.100	.100	72.0	76.0
10	.200	.000	.100	.100	72.0	76.0
11	.200	.000	.100	.100	72.0	76.0
12	.200	.000	.100	.100	72.0	76.0
- L						

```
76.0
                                 .100
                                            .100
                                                        72.0
                       .000
             .200
 13
                                                                    76.0
                                            .100
                                                        72.0
                       .000
                                 .100
             .200
 14
                                                                    76.0
                                 .100
                                            .100
                                                        72.0
            .200
                       .000
 15
                                                                    76.0
                                                        72.0
                                 .300
                                            .300
            .400
                       .000
 16
                                                                    76.0
                                                        72.0
                       .300
                                 .800
                                            .800
             .800
 17
                                                                    76.0
                                                        72.0
                                 .800
                                            .800
                       .300
 18
            1.000
                                                                    76.0
                                            .500
                                                        72.0
                       .300
                                 .500
            1.000
 19
                                                                    76.0
                                .500
                                           .500
                                                        72.0
                       .300
            1.000
 20
                                                        72.0
                                 .800
                                           .800
                       .300
            1.000
 21
                                                        72.0
                                                                    76.0
                                           1.000
             .800
                       .000
                                 1.000
 22
                                       1.000
                                                                    76.0
                                                        72.0
                       .000
                                 1.000
 23
             .200
                                                                    76.0
                                                         72.0
                                 1.000
                       .000
 24
             .200
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                 68.000000
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM)
                        27148.000000
                                   65.000000
ECONOMIZER HIGH TEMP LIMIT F
                                    0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
                                    24.000000
                                  55.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                            1.000000E-01
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
FAN EFFICIENCY (EFAN) 5.500000E-01
                                    8.000000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
                           1
VAV TYPE (IVAV)
VAV TYPE (IVAV)
VAV MINIMUM SUPPLY AIR FRACTION (ARMIN)
2.5000000
58.000000
                                            2.500000E-01
VAV COLD DECK TEMPERATURE F (TCD)
VAV FAN PART LOAD FACTORS
                                                               .400
                                                                          .700
                                           .300
                                                     .620
                                .560
                     .200
           .560
 .000
                                                                          .930
                                                                .800
                                                     .880
                                           .700
           .770
                      .600
                                .830
 .500
                               1.00
                      1.00
           .980
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1700000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 2125000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                          .451
                                                                .400
                                                    .369
                      .200
                                          .300
           .191
                                 .286
 .100
                                                                .800
                                                                          .812
                                                     .718
                                           .700
                                 .625
                      .600
 .500
            .537
            .906
                      1.00
                                 1.00
 .900
                                         892000.000000
CHILLER TYPE (ITYPCH)
                                 0
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                          164905.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                          .370
                                                                .400
                                          .300
                                                     .310
                                .250
 .100
            .200
                      .200
                                                     .650
                                                                .800
                                                                          .760
                      .600
                                           .700
                                 .550
            .450
 .500
                                 1.00
                      1.00
  .900
            .880
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-5.I

BLDG 651 - BARRACKS WITH A/C - DAYTIME OUTSIDE AIR (FT L. WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD 0. -405.	LOSS	13.	-29.	PARTITN DOOR AND SLAB 01.	BSMT 0. 0.	-94.	-14.	-371.	0.
	0. -331.	GAIN LOSS	16.	0. -26.	0. -1.	0.	0. -72.	0. -12.	0. -319.	o. o.
	-271.	LOSS		-22.	0. -1.	0.	-59.	***	2,2.	
APR	19. -115.	GAIN LOSS	20.	0. -14.	0. -1.	0. 0.	11. -30.	0. -7.	2. -172.	6. 0.
	-18.84	LOSS		-5.99	.02 36	.00	-12.23	-3.00	-90.52	•••
					o. o.					
					o. o.					
AUG	259. 0.	GAIN LOSS	20.	2. -1.	0. 0.					
SEP	147. -24.		17.	0. -5.	0.		-11.			
OCT	22. -105.	LOSS			-1.					
	2. -203.				0. -1.					
					0. -1.					
TOT	990. -1868.	GAIN LOSS	215.	6. -169.	0. -8.	o. o.	172. -468.	4. -84.	73. -2141.	4 83. 0.
MAX MAX	HEATING COOLING	LOAD=	= 89	8288. 1200.	BTUH ON BTUH ON	DEC 18 JUL 28	HOUR 9	AME AME	BIENT TE	MP 3.

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-5.I

BLDG 651 - BARRACKS WITH A/C - DAYTIME OUTSIDE AIR (FT L. WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	RNAL S PERATU	JRE F	DAY I		IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONIA	AVG.	THIL						r 11	2.94	71.34
JAN	72.	73.	72.	4 31	18 24	61. 33.	8.24	5.11	2.94	71.54
FEB	72.	76.	72.	9 28	24 24	66. 34.	7.44	4.62	2.65	64.44
MAR	72.	77.	72.	24 28	23 10	68. 68.	8.24	5.11	2.94	71.34
APR	73.	78.	72.	6 2	22 12	65. 69.	7.97	4.95	3.19	69.38
MAY	75.	78.	72.	21 24	1 10	65. 61.	8.24	5.11	3.93	72.34
JUN	76.	80.	73.	3 17	22 6	65. 57.	7.97	4.95	5.19	71.39
JUL	76.	78.	75.	23 10	21 5	65. 57.	8.24	5.11	5.51	73.91
AUG	76.	78.	72.	21 25	24 9	65. 63.	8.24	5.11	4.88	73.28
SEP	75.	79.	72.	4 17	7 10	67. 68.	7.97	4.95	4.21	70.40
OCT	73.	77.	72.	1 12	22 13	65. 70.	8.24	5.11	3.56	71.96
NOV	72.	78.	72.	8 16	22 14		7.97	4.95	3.08	69.28
DEC	72.	72.	72.	23 23	17 15		8.24	5.11	2.94	71.34
YEAR							97.00	60.18	45.01	850.39

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-5.I

BLDG 651 - BARRACKS WITH A/C - DAYTIME OUTSIDE AIR (FT L. WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	MOLIDEL C	OURS WHE	MUMIKAM N TB	
MONTH	HEATING	INCLUDING ECONOMIZER	LOADS WERE HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT	731 653 644 388 121 0 0 2 143 429	744 672 744 720 744 720 744 720 744	0 0 1 2 0 0 0 0	0 0 0 0 0 0 11 0	1109E+07 1074E+07 1118E+07 6624E+06 3422E+06 .0000 .0000 8231E+05 3257E+06 5439E+06	.4539E+06
NOV DEC YEAR	578 743 4432	720 744 8760	4 3 16	0 0 11	7915E+06 1258E+07 1258E+07	.0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	606.86	.00	8.24	5.11	2.03	71.34	26.9
FEB	509.09	.00	7.44	4.62	1.84	64.44	26.9
MAR	442.90	.09	8.24	5.11	2.04	71.34	41.5
APR	216.29	1.10	7.97	4.95	2.03	69.38	45.7
MAY	50.88	3.25	8.24	5.11	2.22	72.34	55.0
JUN	.00	9.84	7.97	4.95	2.39	71.39	70.3
JUL	.00	14.73	8.24	5.11	2.52	73.91	77.0
AUG	.81	13.12	8.24	5.11	2.40	73.28	70.6
SEP	62.03	7.41	7.97	4.95	2.22	70.40	73.8
OCT	215.85	1.25	8.24	5.11	2.14	71.96	49.9
NOV	355.00	.11	7.97	4.95	2.01	69.28	39.8
DEC	599.41	.00	8.24	5.11	2.03	71.34	26.9
YEAR	3059.12	50.89	97.00	60.18	25.87	850.39	77.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 90576. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 651-5.I

BLDG 651 - BARRACKS WITH A/C - DAYTIME OUTSIDE AIR (FT L. WOOD, MO)

OTHER MONTHLY STATISTICS

				01						
i	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	ο.	0	0	.0000	1109E+07
FEB	1421.	901.	1.000	37.	0.	ο.	0	0	.0000	1074E+07
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.2642E+06	1118E+07
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.3504E+06	6624E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.5427E+06	3422E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.7948E+06	.0000
JUL	2470.	1954.	1.000	77.	0.	ο.	0	0	.8912E+06	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.7995E+06	8231E+05
SEP	1800.	1330.	1.000	68.	0.	٥.	0	0	.8468E+06	3257E+06
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.4539E+06	5439E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.2439E+06	7915E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	1258E+07

COMPUTER SIMULATIONS

BUILDING 655

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 04-Mar-93

DATE: BUILDING NO.:

655

BLDG. TYPE:

ADMIN./ SUPPLY

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	865.6	622.9	588.9			
COOLING (kWH)						

SUPPLY AIR FAN	0 CFM
FLOOR AREA	11861 FT ²
CFMI	896 CFM
UA	4132 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS		
M-F	600	1800	60 HR	HR. ON HEATING	1872 HR/YR
SAT.	600	1800	12 HR	HR. ON COOLING	1255 HR/YR
SUN.	0	0	0 HR	HR. OFF HEATING	2496 HR/YR
	TOTAL OCCU	PY HR.	72 HR/WK	HR. OFF COOLING	1673 HR/YR
	TOTAL UNOC		96 HR/WK		
	ANNUAL OCC	ANNUAL OCCUPY HR.			
	ANNUAL UNO	ANNUAL UNOCC. HR.			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

8760 HR/YR 4368 HR/YR 2928 HR/YR

HOUR SAVE (HEATING ONLY) HOUR SAVE (COOLING ONLY)

4368 2928 1872 = 1255 = 2496 HR/YR 1673 HR/YR

HOAUHO	865.6 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	896 CFM *	5006 HR/YR		
HOAUH	865.6 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	896 CFM *	2496 HR/YR		
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	896 CFM *	5006 HR/YR		
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	896 CFM *	1673 HR/YR		
HOAOHC	865.6 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	896 CFM *	3754 HR/YR		
HOAOH	865.6 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	896 CFM *	1872 HR/YR		
COAOHO	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	896 CFM *	3754 HR/YR		
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	896 CFM *	1255 HR/YR		
DC 1	/6 (10 MINUTES PER	HOUR)	=	0.17
OC DEMAND 1	/6 (10 MINUTES PER	HOUR)	=	0.17

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO.: BLDG. TYPE:

655 ADMIN./ SUPPLY

ENERGY CONSTANT CALCULATIONS

ECC	0 kWH -	0 kWH	_	0.00E+00 kWH/CFM-HR	
	0 CFM *	1255 HR/YR			
ECHC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	0 CFM *	3754 HR/YR			
NSUCHO	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	0 CFM *	5006 HR/YR			
NSUCC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	0 CFM *	1673 HR/YR			
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	0 CFM *	3754 HR/YR			
DDCCC	0 kWH	0 kWH	」 =	0.00E+00 kWH/CFM-HR	
	0 CFM *	1255 HR/YR			
NSC	865.6 MBtu -	622.91 MBtu	=	5.87E+04 Btu/UA	
	4132	UA			
DSC	622.91 MBtu -	588.89 MBtu	_ =	8.23E+03 Btu/UA	
	4132				
OPT	(2 HR/DAY X 272 DAY	/YR) – 29 4	HR/YR		
			=	250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
	· · · · · · · · · · · · · · · · · · ·		=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	

EMCENGINEERS, INC. DATE: 08-Feb-93 BHS PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 655BHL FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: ADMINISTRATION / SUPPLY BLDG NO: COMPANY ADMINISTRATION / SUPPLY **BLDG FUNCTION:** # FLOORS 11,861 FLOOR AREA: (SQ. FT) 509 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL EAST WEST SOUTH · NORTH 7,342 729 476 (SQ. FT) 2,859 3,278 WALLS, GROSS 0 1,286 976 0 310 (SQ. FT) GLASS 402 105 0 0 297 (SQ. FT) PERSONNEL DOOR 0 O 0 0 0 (SQ. FT) OVERHEAD DOOR 476 5,654 2,197 729 2,252 (SQ. FT) WALLS, NET (SQ. FT) 11,869 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 402 0 PERSONNEL DOOR (SQ. FT) OVERHEAD DOOR 0 O 0 0 (SQ. FT) BASEMENT WALLS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) **OUTSIDE AIR FILM** 0.17 4' FACE BRICK 0.43 2 0.91 3 AIR SPACE "FACE BRICK 1.89 6' CMU 4 5. AIR SPACE 6. 6" CMU 0.68 INSIDE AIR FILM 7. TOTAL R-WALL = 4.08 0.245 U = 1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 1. OUTSIDE AIR FILM 0.17 BUILT-UP ROOF **BUILT UP ROOF** 0.34 2. 2" RIGID INSULATION 6.68 3. 2" RIGID INSULATION METAL DECKING 0.00 METAL DECKING 19.00 6" BATT INSULATION 5. 6 6" BAIT INSULATION 0.68 INSIDE AIR FILM TOTAL R-ROOF = 26.87 U=1/R 0.037 1.61 **R-GLASS** PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C **GLASS TYPE:** 0.83 SLF SLAB TYPE FLOOR: 4' CONCRETE 0.00 R-BASEM NONE BASEMENT TYPE: R-ODOOR 0.00 OVERHEAD DOOR TYPE NONE R-PDOOR 2.56 PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0 X CFM / SQ.FT. 0.000 = TIGHT WALL H/M/L (SQ.FT.) 844 0.115 X CFM / SQ.FT. = 7342 AVG. WALL H/M/L (SQ.FT.) 0 X CFM / SQ.FT. 0.000 = LEAKY WALL H/M/L (SQ.FT.) 24 1.600 X CFM /OPENING /HR DOOR OPENINGS / HR - SINGLE DOOR 1.385 28 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 896 TOTAL INFILTRATION (CFM) O X DOOR 'U' 0.000 = ODOOR AREA 0 **UA ODOOR** 157 0.391 X DOOR 'U' = PDOOR AREA 402 **UA PDOOR** 1.385 0.245 X WALL "U" ■ WALL AREA 5,654 **UA WALL** 442 X ROOF 'U' 0.037 11,869 = ROOF AREA **UA ROOF** 799 X GLASS 'U' 0.621 - 1,286 **UA GLASS** = GLASS AREA 422 X SLF 0.830 509 = SLAB PERIM. **UA SLAB** 0 O X BASE. "U" 0.000 =B-WALL AREA UA BASEM. 927 X A. T. F. 1.035 896 INFILTRATION CFM 4,132 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204 000	08-Feb-93	BHS	ī
EMC NO.:	DATE:	PREPARED BY:	

CEL 65521

65.

TOT Sen. TOT. Lat (BTU/H) (BTU/H) 7,500 6,000

82

250

Offices, hotels, apts **Application** Typical

Latent (BTU/H)

Sensible (BTU/H)

Rates of Heat Gain from Occupants of Conditioned Spaces

Degree of Activity

4 | Seated, light work, typing

30 People No. of

R

TOTAL

Activity Туре

Zone

Š.

0009

7,500

TOTAL

ZONE CHECKED BY: FILE: BLDG:

			Peak Wattage Value for Lights		
Zone	No. of Focture	Fixture			
Š	Fixtures Type	Type	Description	Watts/Fixture	Total We
	29	ଷ	20 Incandescent 100w	100	2
	17	18	Incandescent - 60w	09	1,020
	16		2 Fluorescent, 2 - 40w lamps, 16w ballast (1x4 ft. fixture)	96	1,536
	68		8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	6,552
			Approximate the second		
TOTAL	131			TOTAL	15,008

			Peak Value for Internal Gains				
1	No of	EALL			Heat Gain		Total
Fone None	Equipmen Type	1 of 2	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
		12	12 Typewriter	1001	10%	400	1,365
		48	46 Microwave Oven	009	92%	009	2,048
	- 10		24 Coffee Maker	1,500	30%	7,500	25,598
	0	, e	Microcomputer	350	91%	2,800	9,556
	2	2	70 Water Cooler	200	20%	3,500	11,946
			53 Refrigerator (12 cu. ft.)	241	20%	482	1,645
	-		49 Radio	71	10%	71	242
_							
				TOTAL	46%	15,353	52,400

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

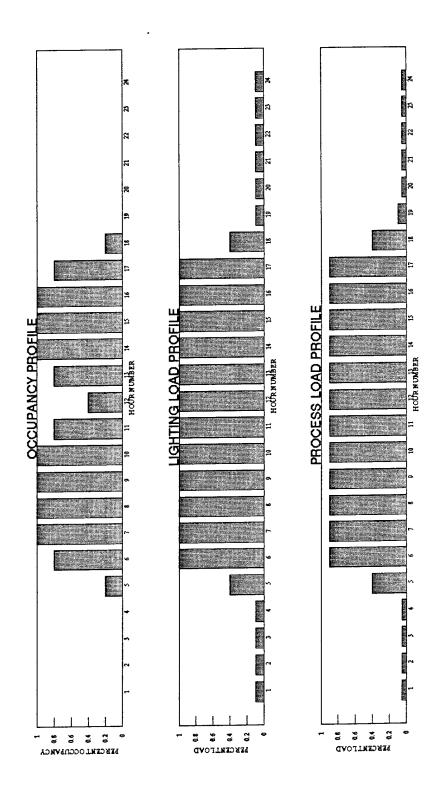
3204 -- 000 08 -- Feb -- 93 DATE: PREPARED BY: EMC NO.:

BHS CEL 655Z1

655

CHECKED BY: FILE: BLDG: ZONE:

פרתפ פרד	BLDG	TYPE OF										Ĭ	OUR	HOUR NUMBER	SER.										
TYPE FUNC	NCTION	PROFILE	F	7	က	4	2	9	7	8	6	9	11 12	12 13	3	Ĭ	14 15 16 17 18 19		8	19	ଯ	2	20 21 22	છ	24
3 Administ	ration	OCCUPANCY	ļ	Γ	H	F	02 (8.0	-	-	F	-	0 8.	4	80	_		0.8	0.2	_	L	L			
-	L	LIGHTING	0.1	0.1	0.1	0.1	4.0		-	-	-	-	-	-	-	_			0.4	0.1	0.1	0.1	0.1	0.1	0.1
		PROCESS	0.1	0.1	0.1	0.1	0.4 0.9 0.9 0.9	6.0) 60	60	60	60 60	0 60	60 60	9 0	30 6	60 60 60 60	<u>30</u>	0.4	0.1	0.1	0.1	0.1	0.1	0.1



BLDG 655 - ADMINISTRATION / SUPPLY BASERUN (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 0

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 6.000000E-01

LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1

SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                                      1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
 FILE NAME MO
                            YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01 SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000 INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 1.000000 INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00 VOLUME OF ZONE IN CURIC FEET (VOLUS) 146321 000000
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 146321.000000
FLOOR AREA (SQFT) 11861.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 493300.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.00000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 118610.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 896.000000
INFILTRATION PROFILE
                                                                                                                              1.00
                                                                                          1.00 1.00
                                   1.00 1.00 1.00
  1.00
             1.00
                                                                                          1.00
  1.00 1.00 1.00 1.00
                                                                       1.00
                                                                                                           1.00
                                                                                                                              1.00
                                                                                          1.00
                                                                                                           1.00
                                                                                                                              1.00
                                                                        1.00
                  1.00
                                    1.00
                                                      1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 3.670000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 22638.00000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 442.000000

PARTITION UA BTU/HP-F (GUA) 0.000000E+00
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 157.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	.245
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	01837	01837	.01837	.01837
CN FACTORS NUMBER OF BN FACTORS (NR	5	5	5	5
RN FACTORS BN (BN)	•	_		
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00283	.00283	.00283
N=3	.01017	.01017	.01017	.01017
N=4	.00498	.00498	.00498	00037
N=5	.00037	.00037	******	*****
N=6	*****	5	5	5
DN FACTORS (ND)	3	J	_	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	0/415
N=5	.00212	.00212	.00212	******
N=6	*****	*****	****	***
ROOF AREA SQFT (AROF) 11865 ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNF	(F) 3.70	(TPOOF)	1	
ROOF TRANS FUNCTIONS USED (1=1	(ES, U=NO)	(1ROOF)	-	
ROOF C TRANSFER FUNCTION (CNR))	.4511 00		
.713E-05 .105E-02 .391E-02	`,193E-02	.143E-03	712.	
modern miniontone (DNE) \			
1.00 -1.18 .410 SKYLIGHT TILT DEGREES (TILT)	444E-01	.500E-03	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
CTVTTCUT ATTMUTH ANGLE DEGREES	N LAZONI	22220000	000	
SKYLIGHT HEIGHT FT (SKH) 0.	.000000E+00)		
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	00000E±00		
SKYLIGHT OVERHANG WIDTH FT (SP OVERHANG HEIGHT ABOVE SKYLIGHT	COWI U.C		OOE+OO	
	1			
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	(SHSK) C	.00000E+0	0	
STIMMER START MONTH AND DAY FOR	SHSK (MST	(,NDST)	1	1
SUMMER END MONTH AND DAY FOR S	SHSK (MND, N	IDND)	1	1
SWMMER END MONTH AND DAT FOR E SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	0.00000E+	-00		
DAYTIME SKY LIGHT U BTU/SQFT-F	R-F (SKYU)	1.	292998	
NIGHT TIME SKYLIGHT U BTU/SQFT	r-HR-F (SKY	(UN)	1.292990	ı ₽ _∩1
FRACTION OF PROCESS HEAT TO IN	NTERNAL SPA	CE (FAP)	4.500000	,E-01
INTER	NAT. GAINS A	AND PROFILE	s	
IRIDIA			THERM	OSTAT SET
			POINT	DEG F
KW				
	PEOPLE	PEOPLE		COOL THE

					101111 2	
	KW -	_	- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	12.	19279	. 7500.	6000.		
HOUR	HO	URLY FRA	CTION OF PE	AK		_
1	.100	.050	.000	.000	70.0	.0
2	.100	.050	.000	.000	70.0	.0
2	.100	.050	.000	.000	70.0	.0
3	.100	.050	.000	.000	70.0	.0
4	.400	.400	.200	.200	70.0	.0
5	1.000	.800	1.000	1.000	70.0	.0
6		.800	1.000	1.000	70.0	.0
7	1.000			1.000	70.0	.0
8	1.000	.800	1.000		70.0	.0
9	1.000	1.000	1.000	1.000		
10	1.000	1.000	1.000	1.000	70.0	.0
11	1.000	1.000	.800	.800	70.0	.0
12	1.000	.700	.400	.400	70.0	.0

```
.0
                                 .800
                                                         70.0
                                            .800
                      1.000
            1.000
  13
                               1.000
                                                                      .0
                                                         70.0
                                           1.000
                      1.000
            1.000
  14
                                                         70.0
            1.000
                                           1.000
                                                                      .0
                                 1.000
                      1.000
  15
                                                         70.0
                                           1.000
                                                                      .0
                      1.000
                                 1.000
            1.000
  16
                                           1.000
                                                         70.0
                                                                       .0
                                1.000
                       .800
  17
            1.000
                                                                      .0
                        .600
                                .800
                                           .800
                                                         70.0
            .800
  18
                                                                      .0
                        .200
                                 .200
                                                         70.0
             .200
                                            .200
  19
                                                                      .0
                                            .000
                                                         70.0
                        .050
             .100
                                 .000
  20
                                            .000
                                                                      .0
                                 .000
                                                         70.0
             .100
                        .050
  21
                                                                      .0
                                            .000
                                  .000
                                                         70.0
                        .050
             .100
  22
                                                                      .0
                                 .000
                                                         70.0
                                            .000
                        .050
  23
             .100
                                .000
                                                         70.0
                                                                      .0
                                            .000
                        .050
  24
             .100
                                            68.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                100.000000
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM) 0.000000E+00
ECONOMIZER HIGH TEMP LIMIT F 100.000000
                                   0.000000E+00
24.000000
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
                                 55.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                            0.00000E+00
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 493300.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 616625.000000
HEATING PLANT RATED INPUT BTU (HFLIN)
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                          .451
                                                               .400
                               .286 .300
                                                    .369
                     .200
           .191
                                         .700 .718
                                                               .800
                                                                          .812
                      .600
                                .625
           .537
 .500
                                1.00
 .900
           .906
                      1.00
CHILLER TYPE (ITYPCH)
                                4
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                           1.000000E-10
                                         0.000000E+00
COOLING PLANT RATED INPUT BTU (CFLIN)
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                          .000
                                                    .000
                                                                .000
                                .000 .000
                     .000
           .000
 .000
                                                    .000
                                                                .000
                                                                          .000
                     .000
                                .000
                                           .000
           .000
 .000
                                .000
 .000
           .000
                     .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655.I BLDG 655 - ADMINISTRATION / SUPPLY BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOR AND				VENT AND	
MNTTL	CAO I		MINDOM	ROOF	SLAB	BSMT	WALL	WINDOW	AND INFL	LATENT
TANI.	0.	GATN	21.	0.	0.	0.	0.	0.	ο.	٥.
	-130.	LOSS							0.	
665	0.	GATN	24.	0.	0.	0.	0.	0.	0.	0.
									0. -86.	
MAD	00	CATN	29.45	.00	.00	.00	.21	.00	.00	.00
PIAK	-81.62	LOSS	25115	-10.03	-13.22	.00	-18.73	-14.97	.00 -79.79	.00
7 DD	.00	CAIN	28.22	.00	.00	.00	.64	.00	.00	.00
	-36.04	LOSS		-6.67	-9.27	.00	-10.31	-10.56	-52.45	
MAY	00	CATN	30 73	.00	.00	.00	.87	.00	.01	.00
MAI	-11.36	LOSS	30.73	-5.46	-8.15	.00	-6.93	-0.74	-39.21	.00
TIIN	.00	CATN	30.87	.00	.00	.00	1.23	.00	.00	.00
JON	-1.91	LOSS	50.0.	-4.44	-7.09	.00	-4.74	-7.84	-34.33	.00
TIIT.	.00	GAIN	31.21	.00	.01	.00	1.30	.01	.05	.00
	71	LOSS		-4.36	-7.07	.00			-34.67	
AIIG	. 00	GAIN	27.85	.01	.00	.00	.99	.00	.01	.00
	-1.09	LOSS		-4.47	-6.86	.00	-5.24	-7.52	-31.70	.00
SEP	. 00	GAIN	25.12	.00	.01	.00	.78	.01	.03	.00
	-11.54	LOSS		-5.20	-6.91	.00	-6.63	-7.75	-35.37	.00
ОСТ	.00	GAIN	23.46	.00	.00	.00	.11	.00	.00	.00
	-32.56	LOSS		-7.23	-8.76	.00	-11.74	-9.70	-44.53	.00
NOV	.00	GAIN	20.32	.00	.00	.00	.01	.00	.00	.00
	-64.45	LOSS		-9.06	-10.89	.00	-17.90	-12.07	33.71	
DEC	0.	GAIN	19.	0.	0.	0.	0.	0.	0.	0.
									0. -95.	
тот	0.	GAIN	311.	0.	0.	0.	6.	0.	0.	0.
101	-598.	LOSS		-93.	-123.	0.	-169.	-138.	0. -693.	0.
		7.035	40	2200	ואר עוויים	DEC 18	HOUR	4 AMF	BIENT TEM	P 1.
MAX	HEATING COOLING	TOYD=	-49	0.	BTUH ON	DEC 31	HOUR 2	4 AMI	BIENT TEM	P 42.
MAA	COOPING	TOWD-		• •						

ZONE UA BTU/HR-F 2778.7

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655.I

BLDG 655 - ADMINISTRATION / SUPPLY BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	RNAL S PERATI MAX	-	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	85.	69.	5 29	16 4		4.85	14.95	.00	25.82
FEB	71.	86.	69.	13 2	16		4.33	13.33	.00	23.04
MAR	73.	104.	69.	28 4	16		4.78	14.73	.00	25.45
APR	77.	108.	69.	30 9	16		4.61	14.19	.00	24.52
MAY	84.	115.	69.	29 11	16		4.85	14.95	.00	25.82
JUN	89.	119.	70.	29 16	16		4.61	14.19	.00	24.52
JUL	93.	125.	70.	31 10	16		4.78	14.73	.00	25.45
AUG	91.	120.	70.	29 25	16	95. 1 54.	4.85	14.95	.00	25.82
SEP	84.	117.	69.	7 15	16		4.54	13.98	.00	24.15
OCT	77.	112.	69.	4 28		81. 4 30.	4.85	14.95	.00	25.82
NOV	73.	100.	69.	8 3		5 75. 4 17.	4.68	14.41	.00	24.89
DEC	70.	85.	68.	23 18		6 67. 4 1.	4.71	14.52	.00	25.08
YEAR							56.42	173.89	.00	300.40

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655.I

BLDG 655 - ADMINISTRATION / SUPPLY BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	110112221 02 00	OURS WHEN	MAXIMUM FTG	
MONTH	HEATING	ECONOMIZER	HEATING CO	OLING	HEATING	COOLING
JAN	671	0	0	0	4601E+06	.0000
FEB	555	0	0	0	3972E+06	.0000
MAR	523	0	0	0	2511E+06	.0000
APR	330	0	0	0		.0000
MAY	179	0	0	0	1746E+06	.0000
JUN	54	0	0	0	7681E+05	
JUL	26	0	0	0	6304E+05	.0000
AUG	28	0	0	0	8032E+05	.0000
SEP	149	0	0	0	1550E+06	.0000
OCT	343	0	0	0	2315E+06	.0000
NOV	498	0	0	0	3281E+06	.0000
DEC	662	0	2	0	4933E+06	.0000
YEAR	4018	Ο	2	0	4933E+06	.0000

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655.I

SYSTEM TOTALS

		ENERG			_	OTAL INTERNAL	MAXIMUM ELECTRIC
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	DEMAND
MONTH		KWH	KWH	BTU	KWH	BTU	KW
JAN	185.47	.00	4.85	14.95	.00	25.82	12.2
FEB	147.56	.00	4.33	13.33	.00	23.04	12.2
MAR	124.16	.00	4.78	14.73	.00	25.45	12.2
APR	62.38	.00	4.61	14.19	.00	24.52	12.2
MAY	25.79	.00	4.85	14.95	.00	25.82	12.2
JUN	6.62	.00	4.61	14.19	.00	24.52	12.2
JUL	3.08	.00	4.78	14.73	.00	25.45	12.2
AUG	3.49	.00	4.85	14.95	.00	25.82	12.2
SEP	23.63	.00	4.54	13.98	.00	24.15	12.2
OCT	60.16	.00	4.85	14.95	.00	25.82	12.2
NOV	104.84	.00	4.68	14.41	.00	24.89	12.2
DEC	180.99	.00	4.71	14.52	.00	25.08	12.2
YEAR	928.16	.00	56.42	173.89	.00	300.40	12.2

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 109148. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655.I

BLDG 655 - ADMINISTRATION / SUPPLY BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				011						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	4601E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	4023E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.0000	3972E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	2511E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	1746E+06
JUN	2567.	1933.	1.000	72.	0.	Ο.	0	0	.0000	7681E+05
JUL	2470.	1954.	1.000	77.	0.	ο.	0	0	.0000	6304E+05
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	8032E+05
SEP	1800.	1330.	1.000	68.	0.	ο.	0	0	.0000	1550E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	2315E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	3281E+06
DEC	856.	586.	1.000	35.	0.	0.	0	2	.0000	4933E+06

BLDG 655 - ADMINISTRATION / SUPPLY NIGHT SETBACK (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (NEED)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 6.000000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                    YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                                   70.000000
                                                               70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 1.000000
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
                                                                1.000000
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 146321.000000
FLOOR AREA (SQFT) 11861.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX)

COOLING COIL MAX COOLING RATE BTU/HR (QCMAX)

COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA)

118610.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 896.000000
INFILTRATION PROFILE
                                          1.00
                                                                                  1.00
                                                                                               1.00
                                                                    1.00
                                                      1.00
                            1.00
 1.00
             1.00
 1.00
                                                                    1.00
                                                      1.00
                                                                                   1.00
                                                                                               1.00
                          1.00
                                        1.00
             1.00
                                                                    1.00
                                                                                   1.00
                                                                                                1.00
                                                      1.00
                                         1.00
                           1.00
 1.00
             1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 3.670000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 22638.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SIAR ON GRADE FACTOR BTU/HR-F (SLBF) 442.0000
                                                        442.000000
SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 157.000000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
```

	WALL DAT			
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	2197.0	476.0	2252.0	729.0
WINDOW AREA SOFT (AWND)	976.0	.0	310.0	.0
WINDOW HEIGHT FT (WNDH)	10.0	.0	10.0	.0
WINDOW WIDTH FT (WNDW)	97.6	.0	31.0	.0
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

WINDOW SHADING FACTOR (SHD) 5.900000E-01

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	01027	01027	01837	01837	
CN FACTORS	.0103/	.01037	.01037	5	
NUMBER OF BN FACTORS (NB	5	5	3	J	
BN FACTORS BN (BN)	00003	00003	00003	00003	
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00283	.00283	01017	
N=3	.01017	.01017	.01017	.01017	
N=4	.00498	.00498	.00498	.00498	
N=5	.00037	.00037	.00037	.00037	
BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	*****	*****	******	****	
NUMBER OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS					
N=1	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N-6	*****	*****	*****	*****	
DOOR ADEA CORT /ADOR\ 11869	000000				
ROOF U VALUE BTU/HR-SQFT-F (UR: ROOF TRANS FUNCTIONS USED (1=Y) ROOF C TRANSFER FUNCTION (CNR)	F) 3.70	0000E-02			
ROOF U VALUE BIO/IN-SQFI F (ON	ES U=NO)	(TROOF)	1		
ROOF TRANS FUNCTIONS USED (1-1)	65, U-NO) 7 0435	45E-03	_		
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR).0 4 55	455 05			
.713E-05 .105E-02 .391E-02	/ 1035-02	143E-03	712.		
.713E-05 .105E-02 .391E-02	.1936-02	.1435 03	, 12.		
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.18 .410 SKYLIGHT TILT DEGREES (TILT)) 4445-01	EUUE-U3	999		
1.00 -1.18 .410		**************************************	333.		
SKYLIGHT TILT DEGREES (TILT)	(370%)	6000 AAA	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000		
SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	l			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00	000000			
SKYLIGHT OVERHANG WIDTH FT (SK	O.0	00000E+00	002100		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
SKYLIGHT GLASS NUMBER (NS)	1		_		
SKYLIGHT SHADING COEFFICIENT (SHSK) 0	.000000E+0	0	1	
SKYLIGHT GLASS NOMBER (NO) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SI	SHSK (MST	', NDST)	. 1	1	
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	DND)	1	7	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-HI NIGHT TIME SKYLIGHT U BTU/SQFT-	0.000000E+	00			
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	UN)	1.292998	- 01	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	4.500000	R-01	
THE PROPERTY AND THE PURPMOSTATIONS	RTI.R				
.000 .000 .000	.000	.000	.000	.000	.000
.000 .000 .000	.000	.000	.000	.000	.000
.000 .000 .000	.000	.000	.000	.000	.000
.000					
WEEKEND HEATING THERMOSTAT PRO	FILE				
WEEKEND HEATING THERMOSTAT PRO 55.0 55.0 55.0	55.0	55.0	70.0	70.0	70.0
55.0 55.0 55.0					
70.0 70.0 70.0	70.0	70.0	70.0	70.0	70.0
70.0 70.0 70.0	, 0.0	,			
70 0 EE 0	55.0	55.0	55.0	55.0	55.0
70.0 70.0 55.0	33.0	33.0	55.5		

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F
	mer / eem			

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
PEAK VAL 12. 19279. 7500. 6000. HOUR - - - HOURLY FRACTION OF PEAK - - - -
.0
                                                                   .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                     .0
                                                                    .0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 0.000000E+00
ECONOMIZER HIGH TEMP LIMIT F 100.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00 SYSTEM SUPPLY AIR STOP TIME HR 24.000000 SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 493300.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 616625.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                           .286 .300 .369 .400 .451
          .191
                     .200
                               .625 .700 .718 .800
                                                                      .812
                     .600
  .500
            .537
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 1.000000E-10
COOLING PLANT RATED INPUT BTU (CFLIN) 0.000000E+00
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                 .000 .000 .000 .000
                                                             .000
                                                                       .000
  .000
         .000
  .000 .000 .000 .000 .000
                                                                       .000
                                                            .000
  .000 .000 .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655-2.I

BLDG 655 - ADMINISTRATION / SUPPLY NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOF				VENT	
			THRU	BOOF	AND	ремт	WAT.T.	WINDO	AND V INFL	LATENT
MNT	.00	CATN	WINDOW 21 02	ROOF OO	.00 20AD	.00	.00	-00	.00	.00
	-94.92		21.02	-10.87	-13.13	- 00	-23.06	-14.84	-80.21	.00
	34. 32	DODD		10.07	20.10	***				
REB	. 00	GAIN	23.72	.00	.00	.00	.01	.00	.00	.00
	-71.98	LOSS		-9.00	-11.23	.00	-17.03	-12.74	-68.76	.00
MAR	.00	GAIN	29.45	.00	.00	.00	.26	.00	.00 -64.10	.00
	-53.96			-8.33	-10.90	.00	-13.44	-12.35	-64.10	.00
APR	.00	GAIN	28.22	.00	.00	.00	.74	.00	.02	.00
	-20.48	LOSS		-5.63	-7.87	.00	-7.10	-9.00	-43.90	.00
MAY	.00	GAIN	30.73	.00	.00		.98	.01	.02	.00
	-5.32	LOSS		-5.02	-7.56	.00	-5.66	-8.29	-36.26	.00
JUN	.00	GAIN	30.87	.00	.00	.00	1.30	.00	.00	.00
• • • • • • • • • • • • • • • • • • • •		LOSS		-4.35	-6.96	.00	-4.52	-7.70	-33.78	.00
JUL	.00	GAIN	31.21	.00	.01	.00	1.33	.01	.06	.00
		LOSS		-4.32	-7.02	.00	-4.62	-7.82	-34.47	.00
								00	01	.00
AUG	.00		27.85	.01	.00	.00	1.01	.00	.01	
	56	LOSS		-4.43	-6.80	.00	-5.13	-/.46	-31.65	.00
					0.1	00	0.0	0.1	04	.00
SEP	.00	GAIN	25.12	.00	.01	.00	- 02	7 12	.04 -32.27	.00
	-5.22	LOSS		-4.80	-6.34	.00	-5.41	-/.12	-32.21	.00
				00	01	00	1.4	01	0.3	.00
			23.46	.00	.01	.00	-0 41	_0 11	.03 -36.55	.00
	-17.08	LOSS		-6.16	-/.31	.00	-0.41	-0.11	30.33	.00
			00 30	00	00	00	01	00	.00	.00
NOV	.00	GAIN	20.32	7.50	.00	.00	-12 22	-9 79	.00 -46.93	.00
	-41.08	LOSS		-/.50	-0.02	.00	-13.22	- 3.13	40.55	•00
	00	C 3 T 33	10 31	00	00	00	00	. 00	.00	.00
DEC	.00	GAIN	19.31	-10.74	_12 77	.00	-23 00	-14.27	-75.28	.00
	-91.67	FOSS	-	-10.74	-12.//	.00	23.00	24.2.	,0,20	• • •
mor.	0	CATN	311	0	Ο.	0.	7.	0.	0.	0.
TOT	_403	TOCC	311.	-81	-107	0.	-131.	-119.	0. -584.	0.
	-403.	TOSS		01.	10,.	٠.		•		
мау	HEATING	LOAD=	-49	3300. E	BTUH ON	DEC 18	HOUR	7 AME	SIENT TEMP	-1.
	COOLING			0. E	BTUH ON	DEC 31	HOUR 24	AME	IENT TEMP	42.
TITAL	COULTING				· •					

ZONE UA BTU/HR-F 2778.7

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655-2.I

BLDG 655 - ADMINISTRATION / SUPPLY NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	RNAL S				COIN- CIDENT	LIGHTING THOUSAND		HEAT MILLION	HEAT GAIN MILLION
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	BTU	BTU
JAN	64.	86.	54.	5 29	16	61.	4.85	14.95	.00	25.82
FEB	65.	87.	54.	13 2	16	68. 1 14.	4.33	13.33	.00	23.04
MAR	68.	104.	54.	28 4	16		4.78	14.73	.00	25.45
APR	74.	108.	55.	30 9	16	84. 1 31.	4.61	14.19	.00	24.52
MAY	82.	115.	55.	29 11	16		4.85	14.95	.00	25.82
JUN	89.	119.	60.	29 17	16		4.61	14.19	.00	24.52
JUL	93.	125.	63.	31 10	16		4.78	14.73	.00	25.45
AUG	91.	120.	60.	29 25	16		4.85	14.95	.00	25.82
SEP	83.	117.	55.	7 15	16		4.54	13.98	.00	24.15
OCT	73.	112.	5 5.	4 28	16		4.85	14.95	.00	25.82
NOV	68.	100.	54.	8 3	16		4.68	14.41	.00	24.89
DEC	64.	85.	54.	23 18	16		4.71	14.52	.00	25.08
YEAR							56.42	173.89	.00	300.40

655-2.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 655 - ADMINISTRATION / SUPPLY NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF H LOADS WERE HEATING CO		MAXIMUM BTT HEATING	
JAN	600	o	4	0	4933E+06	.0000
FEB	476	0	0	0	4927E+06	.0000
MAR	410	0	2	0	4933E+06	.0000
APR	201	0	0	0	3886E+06	.0000
MAY	62	0	0	0	3039E+06	.0000
JUN	13	0	0	0	1613E+06	.0000
JUL	5	0	0	0	8738E+05	.0000
AUG	8	0	0	0	2039E+06	.0000
SEP	64	Ō	0	0	3271E+06	.0000
OCT	199	Ö	0	0	3743E+06	.0000
NOV	366	Ō	0	0	4671E+06	.0000
DEC	597	Ō	3	0	4933E+06	.0000
YEAR	3001	ő	9	0	4933E+06	.0000

SYSTEM TOTALS

		ENERG		TOTAL INTERNAL MAXIMUM				
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND	
MONTH		KWH	KWH	BTU	KWH	BTU	KW	
JAN	143.86	.00	4.85	14.95	.00	25.82	12.2	
FEB	110.87	.00	4.33	13.33	.00	23.04	12.2	
MAR	86.86	.00	4.78	14.73	.00	25.45	12.2	
APR	36.81	.00	4.61	14.19	.00	24.52	12.2	
MAY	10.44	.00	4.85	14.95	.00	25.82	12.2	
JUN	1.90	.00	4.61	14.19	.00	24.52	12.2	
JUL	.64	.00	4.78	14.73	.00	25.45	12.2	
AUG	1.23	.00	4.85	14.95	.00	25.82	12.2	
SEP	10.72	.00	4.54	13.98	.00	24.15	12.2	
OCT	33.60	.00	4.85	14.95	.00	25.82	12.2	
NOV	70.78	.00	4.68	14.41	.00	24.89	12.2	
DEC	140.12	.00	4.71	14.52	.00	25.08	12.2	
YEAR	647.84	.00	56.42	173.89	.00	300.40	12.2	

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 85514. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655-2.I

BLDG 655 - ADMINISTRATION / SUPPLY NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

					OIL	IEK HOH	TIME O	TWITOI.			
MC	ONTH	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT-	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.		STEM DRIFT G. F	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
J	AN	1010.	655.	1.000	35.	0.	0.	0	4	.0000	4933E+06
F	ΈB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	4927E+06
M	IAR	1864.	1216.	1.000	43.	0.	0.	0	2	.0000	4933E+06
A	PR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	3886E+06
М	ΙΆΥ	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	3039E+06
J	UN	2567.	1933.	1.000	72.	0.	ο.	0	0	.0000	1613E+06
J	UL	2470.	1954.	1.000	77.	0.	ο.	0	0	.0000	8738E+05
A	UG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	2039E+06
s	ΕP	1800.	1330.	1.000	68.	0.	ο.	0	0	.0000	3271E+06
0	CT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	3743E+06
N	OV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	4671E+06
D	EC	856.	586.	1.000	35.	0.	ο.	0	3	.0000	4933E+06

BLDG 655 - ADMINISTRATION / SUPPLY DDC (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (ICWK) 3
WEEKEND INTERNAL GAINS FACTOR (WKEND) 6.000000E-01
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                                                   YEAR 1955
 STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
MEAN AMBIENT TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 1.000000
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
                                                                                                                                                          70.000000
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 146321.000000
                                                                  11861.000000
 FLOOR AREA (SQFT)
                                                                                                                                                  493300.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) COOLING COIL MAX COOLING RATE BTU/HR (QCMAX)
 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT INFILED TO CONSTANT
 CONSTANT INFILTRATION RATE CFM (CFMI) 896.000000
 INFILTRATION PROFILE
                                                                                                                                                                                                1.00
                                                                                                                                                                                                                                 1.00
                                                                                                1.00 1.00
                                                                  1.00
                                                                                                                                                                   1.00
     1.00
                         1.00
                                                                                                                                                                 1.00
                                                                                                                                                                                                  1.00
                                                                                                                                                                                                                                 1.00
                                                                                                                               1.00
    1.00 1.00 1.00
                                                                                                1.00
                                                                                                                                                                    1.00
                                                                                                                                                                                                  1.00
                                                                                                                                                                                                                                 1.00
                                                                                                                                  1.00
                                                                  1.00
                                                                                                 1.00
                                1.00
     1.00
 A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

C FACTOR IN INFILTRATION EQUATION (CINC)

2.165000E-02

8.330000E-03

22638.000000
  C FACTOR IN INFILIRATION DESCRIPTION 22638.000
BUILDING THERMAL MASS MCP BTU/FF (CMCP) 22638.000
BASEMENT UA FACTOR BTU/HR-F (SLBF) 0.000000E+00
442.00000
                                                                                                                                     442.000000
  SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
```

B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 22638.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 442.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 157.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01

	WALL DAT	A		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SOFT (AWLL)	2197.0	476.0	2252.0	729.0
WINDOW AREA SQFT (AWND)	976.0	.0	310.0	.0
WINDOW HEIGHT FT (WNDH)	10.0	.0	10.0	.0
WINDOW WIDTH FT (WNDW)	97.6	.0	31.0	.0
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	.245	
WALL TRANSFER FUNCTIONS		01037			
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	.01837	.01837	.01837 5	5	
NUMBER OF BN FACTORS (NB	5	5	3	J	
BN FACTORS BN (BN)	00003	00003	. 00003	.00003	
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00003	.00283	.00283	.00283	
N=2	.01017	.01017	.01017	.01017	
N=3	.00498	.00498	.00498	.00498	
N-E M-4	.00037	.00037	.00037	.00037	
N=6	*****	*****	*****	*****	
NUMBER OF DN FACTORS (ND)	5	5	5	5	
Month of the control					
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N=6	*****	*****	*****	*****	
DOOR REEN CORT (ADOR) 11869	. 000000				
ROOF U VALUE BTU/HR-SQFT-F (UR	F) 3.70	0000E-02			
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1		
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	7.0435	45E-03			
TOOM TO MENTER THROUGHTONS CHAR					
713E-05 .105E-02 .391E-02	.193E-02	.143E-03	712.		
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.18 .410	.)				
1.00 -1.18 .410	444E-01	.500E-03	999.		
CKVITCHT TILT DEGREES (TILT)	0.000000	ETUU			
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	1000		
SKYLIGHT HEIGHT FT (SKH) 0.	000000E+00)			
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00				
SKYLIGHT OVERHANG WIDTH FT (SK	OW) U.U	OOOOOE+OO	.00=.00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00		
SKYLIGHT GLASS NUMBER (NS)	1	000000	10		
SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK) (VOT).000000E+0	1	1	
SUMMER START MONTH AND DAY FOR	SHSK (MS1	(,NDST)	1	1	
SUMMER END MONTH AND DAY FOR S	HSK (MND,N	ן עאעו 100	1	+	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	0.00000000	.00	202008		
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKIU)		1 202008		
NIGHT TIME SKYLIGHT U BTU/SQFT	-HK-F (SKI	ON)	4 500000	E-01	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	4.50000	11 01	
WEEKEND COOLING THERMOSTAT PRO	LITE	000	000	.000	.000
.000 .000 .000	.000	.000	.000	.000	••••
200 000 000	.000	.000	.000	.000	.000
.000 .000 .000	.000	.000			
000 000 000	.000	.000	.000	.000	.000
.000 .000 .000	.000	.000			
WEEKEND HEATING THERMOSTAT PRO	FILE				
MPDICTIO TITLE TO THE TOTAL TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL THE TOTAL TOTAL TO THE TOTAL TOTAL TO THE TOTAL TOTA	55.0	55.0	68.0	68.0	68.0
55.0 55.0 55.0	30.0				
68.0 68.0 68.0	68.0	68.0	68.0	68.0	68.0
00.0 00.0 00.0		'			
68.0 68.0 55.0	55.0	55.0	55.0	55.0	55.0

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
PEAK VAL 12. 19279. 7500. 6000. HOUR - - - HOURLY FRACTION OF PEAK - - - -
.0
                                                                            .0
                                                                           .0
                                                                           .0
                                                                            .0
                                                                            .0
                                                                           .0
                                                                           .0
                                                                           .0
                                                                            .0
                                                                            .0
                                                                           .0
                                                                           .0
                                                                           .0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 0.000000E+00
ECONOMIZER HIGH TEMP LIMIT F 100.000000
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
24.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
55.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 8.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 493300.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 616625.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
          .191 .200 .286 .300 .369
                                                                  .400
                                                                              .451
 .100
                                            .700 .718
        .537 .600
                                                                   .800
                                                                               .812
                                  .625
  .500
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 4
COOLING PLANT RATED OUTPUT BTU (CFLOT) 1.000000E-10 COOLING PLANT RATED INPUT BTU (CFLIN) 0.000000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
            .000 .000 .000 .000 .000 .000
  .000
            .000 .000 .000 .000 .000 .000
  .000
  .000 .000 .000
```

BLDG 655 - ADMINISTRATION / SUPPLY DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH LOAD JAN - 0.00 -89.49				PARTI!				VENT	
MNTH LOAD JAN - 89.49 LOSS WINDOW ROOF SLAB			munii	AND				AND	
JAN	MATERIA TOND		MINDOM BOO	F SLAR	RSMT	WALL	WINDOW	INFL	LATENT
-89.49 LOSS	MNTH LOAD	CATN	21 02 .0	00.00	. 00	.00	.00	.00	.00
FEB			-10.5	5 -12.70	.00	-22.07	-14.36	-77.00	.00
-67.65 LOSS	-03.43	DOSS	10.5						
-67.65 LOSS	EEB OO	GATN	23.72 .0	0 .00	.00	.01	.00	.00	.00
MAR			-8.7	5 -10.89	.00	-16.25	-12.35	-66.19	.00
APR	07.03	2000							
APR	MAR .00	GAIN	29.45 .0	0 .00	.00	.31	.00	.00	.00
APR	-50.17	LOSS	-8.1	1 -10.60	.00	-12.79	-12.00	-61.89	.00
-18.31 LOSS									
-18.31 LOSS	APR .00	GAIN	28.22 .0	0 .00		.83	.00	.02	.00
MAY			-5.4	9 -7.68	.00	-6.74	-8.78	-42.70	.00
-4.17 LOSS									
-4.17 LOSS	MAY .00	GAIN	30.73 .0	0 .01	.00	1.08	.01	.03	
39 LOSS			-4.9	4 - 7.44	.00	-5.49	-8.17	-35.71	.00
39 LOSS								00	00
JUL .00 GAIN 31.21 .00 .02 .00 1.34 .02 .07 .00 .00 .00 .00 .00 .00 .00 .00 .00			30.87 .0	0 .00	.00	1.34	.00	.00	
08 LOSS -4.31 -7.01 .00 -4.60 -7.81 -34.41 .00 AUG .00 GAIN 27.85 .01 .00 .00 1.03 .00 .01 .0035 LOSS -4.42 -6.78 .00 -5.11 -7.44 -31.55 .00 SEP .00 GAIN 25.12 .00 .01 .00 .86 .01 .04 .00 -4.46 LOSS -4.74 -6.26 .00 -5.28 -7.03 -31.89 .00 OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 -15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .00 .02 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00	39	LOSS	-4.3	2 -6.93	.00	-4.48	-7.66	-33.63	.00
08 LOSS -4.31 -7.01 .00 -4.60 -7.81 -34.41 .00 AUG .00 GAIN 27.85 .01 .00 .00 1.03 .00 .01 .0035 LOSS -4.42 -6.78 .00 -5.11 -7.44 -31.55 .00 SEP .00 GAIN 25.12 .00 .01 .00 .86 .01 .04 .00 -4.46 LOSS -4.74 -6.26 .00 -5.28 -7.03 -31.89 .00 OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 -15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .00 .02 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00			_			1 24	03	07	00
AUG .00 GAIN 27.85 .01 .00 .00 1.03 .00 .01 .00 .00 .01 .00 .00 .01 .00 .00			31.21 .0	0 .02		1.34	7 01	_24_41	
35 LOSS -4.42 -6.78 .00 -5.11 -7.44 -31.55 .00 SEP .00 GAIN 25.12 .00 .01 .00 .86 .01 .04 .00 -4.46 LOSS -4.74 -6.26 .00 -5.28 -7.03 -31.89 .00 OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 -15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .02 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00	08	LOSS	-4.3	1 -7.01	.00	-4.60	-/.61	-34.41	.00
35 LOSS -4.42 -6.78 .00 -5.11 -7.44 -31.55 .00 SEP .00 GAIN 25.12 .00 .01 .00 .86 .01 .04 .00 -4.46 LOSS -4.74 -6.26 .00 -5.28 -7.03 -31.89 .00 OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 -15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .02 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00					00	1 03	00	. 01	- 00
SEP .00 GAIN 25.12 .00 .01 .00 .86 .01 .04 .00 .00 .00 .00 .00 .00 .00 .00 .00	AUG .00	GAIN	27.85	1 .00		-5 11	-7.44	-31.55	
-4.46 LOSS -4.74 -6.26 .00 -5.28 -7.03 -31.89 .00 OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 -15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .02 .00 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00									
-4.46 LOSS -4.74 -6.26 .00 -5.28 -7.03 -31.89 .00 OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 -15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .02 .00 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00		CATN	25 12 0	0 01	. 00	. 86	.01	.04	.00
OCT .00 GAIN 23.46 .00 .01 .00 .17 .01 .02 .00 .00 .15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 .00 .00 .37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 .00 .00 .00 .00 .00 .00 .00 .00	SEP .00	GAIN	25.12 .U	4 -6 26	.00	-5.28	-7.03	-31.89	.00
-15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .02 .00 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00	-4.45	LUSS	-4.7	. 0.20	•••				
-15.11 LOSS -6.03 -7.13 .00 -8.03 -7.91 -35.51 .00 NOV .00 GAIN 20.32 .00 .00 .00 .02 .00 .00 .00 -37.65 LOSS -7.34 -8.53 .00 -12.55 -9.46 -45.03 .00 DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 -86.39 LOSS -10.43 -12.34 .00 -22.02 -13.79 -72.20 .00	00	CATN	23.46 .0	0 .01	.00	.17	.01	.02	.00
NOV .00 GAIN 20.32 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	_15 11	LOSS	-6.0	3 -7.13	.00	-8.03	-7.91	-35.51	.00
DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0									
DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	NOV .00	GAIN	20.32 .0	0 .00	.00	.02	.00	.00	
DEC .00 GAIN 19.31 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	-37.65	LOSS	-7.3	4 -8.53	.00	-12.55	-9.46	-45.03	.00
	DEC .00	GAIN	19.31 .0	0 .00	.00	.00	.00	.00	.00
	-86.39	LOSS	-10.4	3 - 12.34	.00	-22.02	-13.79	-72.20	.00
TOT 0. GAIN 311. 0. 0. 0. 7. 0. 0. 0374. LOSS -79104. 0125117568. 0.									
-374. LOSS -79104. 0125117568. 0.	TOT 0.	GAIN	311. 0	. 0.	0.	7.	0.	U.	0.
	-374.	LOSS	-79	104.	0.	-125.	-117.	-568.	U.
ACCORD DEVISON DEG 19 HOUR 6 AMETERY TEMP 1.					DEC 10	HOLLB	c ame	የተቋለጥ ጥምል	P Ω.
MAX HEATING LOAD= -493300. BTUH ON DEC 18 HOUR 6 AMBIENT TEMP 0. MAX COOLING LOAD= 0. BTUH ON DEC 31 HOUR 24 AMBIENT TEMP 42.	MAX HEATING	LOAD=	-493300.	BTUH ON	DEC 18	מיוטעג י	A MILE	TENT TEM	P 42.
MAX COOLING LOAD= 0. BTUH ON DEC 31 HOUR 24 AMBIENT TEMP 42.	MAX COOLING	LOAD=	0.	BTUH ON	בי ספת	HOUR Z	4 MILE	,	

ZONE UA BTU/HR-F 2778.7

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655-1.1

BLDG 655 - ADMINISTRATION / SUPPLY DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	PERAT	SPACE URE F	DAY		COIN- CIDENT	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	nĸ	AMBT.	KWI	БТО		
JAN	63.	86.	54.	5 29	16		4.85	14.95	.00	25.82
FEB	64.	87.	54.	13 2	16	68. 14.	4.33	13.33	.00	23.04
MAR	67.	104.	54.	28 4	16	5 76. 1 15.	4.78	14.73	.00	25.45
APR	74.	108.	55.	30 9	16	5 84. 4 31.	4.61	14.19	.00	24.52
MAY	82.	115.	55.	29 11	16	6 85. 4 38.	4.85	14.95	.00	25.82
JUN	89.	119.	60.	29 17	16	5 87. 5 56.	4.61	14.19	.00	24.52
JUL	93.	125.	63.	31 10	16	5 95. 5 57.	4.78	14.73	.00	25.45
AUG	91.	120.	60.	29 25	16	5 95. 5 52.	4.85	14.95	.00	25.82
SEP	83.	117.	55.	7 15	16	5 86. 4 41.	4.54	13.98	.00	24.15
OCT	73.	112.	55.	4 28	16		4.85	14.95	.00	25.82
NOV	67.	100.	54.	8	10	5 75. 4 17.	4.68	14.41	.00	24.89
DEC	63.	85.	54.	23 18	10	6 67. 4 1.	4.71	14.52	.00	25.08
YEAR							56.42	173.89	.00	300.40

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655-1.I

BLDG 655 - ADMINISTRATION / SUPPLY DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING		OURS WHE	MAXIMUM TE	
MONTH	HEATING	ECONOMIZER	HEATING COO	DLING	HEATING	COOLING
JAN	595	0	2	0	4933E+06	.0000
FEB	469	0	0	0	4550E+06	.0000
MAR	399	0	0	0	4839E+06	.0000
APR	185	0	0	0	3512E+06	.0000
MAY	56	Ô	0	0	2666E+06	.0000
JUN	5	Ö	Ō	0	1237E+06	.0000
	4	Õ	Ō	0	5009E+05	.0000
JUL	6	Õ	Ö	Ō	1666E+06	.0000
AUG	60	0	ő	ō	2898E+06	.0000
SEP	181	ŏ	Ŏ	ŏ	3368E+06	.0000
OCT	345	0	ő	ō	4294E+06	.0000
NOV	_	0	1	ŏ	4933E+06	.0000
DEC	596	0	3	ŏ	4933E+06	.0000
YEAR	2901	U	3	J		

SYSTEM TOTALS

	HEATING MILLION	ENERG COOLING THOUSAND	Y CONSUMPT LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	OTAL INTERNAL HEAT GAIN MILLION	MAXIMUM ELECTRIC DEMAND
MONTH	BTU	KWH	KWH	BTU	KWH	BTU	KW
JAN	138.03	.00	4.85	14.95	.00	25.82	12.2
FEB	105.70	.00	4.33	13.33	.00	23.04	12.2
MAR	82.04	.00	4.78	14.73	.00	25.45	12.2
APR	33.09	.00	4.61	14.19	.00	24.52	12.2
MAY	8.76	.00	4.85	14.95	.00	25.82	12.2
JUN	.79	.00	4.61	14.19	.00	24.52	12.2
JUL	.47	.00	4.78	14.73	.00	25.45	12.2
AUG	.91	.00	4.85	14.95	.00	25.82	12.2
SEP	9.56	.00	4.54	13.98	.00	24.15	12.2
OCT	29.86	.00	4.85	14.95	.00	25.82	12.2
NOV	65.44	.00	4.68	14.41	.00	24.89	12.2
DEC	134.74	.00	4.71	14.52	.00	25.08	12.2
YEAR	609.38	.00	56.42	173.89	.00	300.40	12.2

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 82272. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 655-1.I

BLDG 655 - ADMINISTRATION / SUPPLY DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				OIL	ER PO	ATILLI D	1111101			
MONTE	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.		YSTEM DRIFT EG. F	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	2	.0000	4933E+06
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	4550E+06
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.0000	4839E+06
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	3512E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	2666E+06
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.0000	1237E+06
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.0000	5009E+05
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	1666E+06
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.0000	2898E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	3368E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	4294E+06
DEC	856.	586.	1.000	35.	ο.	0.	0	1	.0000	4933E+06

COMPUTER SIMULATIONS

BUILDING 672

EMCENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

04-Mar-93

DATE: BUILDING NO.:

672

BLDG. TYPE:

MOTOR POOL

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1103.2	737.6	719.4			
COOLING (kWH)						

SUPPLY AIR FAN	4400 CFM
FLOOR AREA	4800 FT ²
CFMI	1320 CFM
UA	4857 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
30,121,100	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
	700	1700	50 HR	HR. ON HEATING	1300 HR/YR
M-F SAT.	700	0	0 HR	HR. ON COOLING	871 HR/YR
SUN.	0	0	0 HB	HR. OFF HEATING	3068 HR/YR
SUIV.	TOTAL OCCU	PY HR.	50 HR/WK	HR. OFF COOLING	2057 HR/YR
	TOTAL UNOC		118 HR/WK		
	ANNUAL OCC		2607 HR/YR		
	ANNUAL UNC		6153 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 1300 = 3068 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 871 = 2057 HR/YR

HOAUHO	1103.16 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	1320 CFM *	6153 HR/YR			
HOAUH	1103.16 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	1320 CFM *	3068 HR/YR			
COAUHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	1320 CFM *	6153 HR/YR			
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
0 0.112	1320 CFM *	2057 HR/YR			
HOAOHC	1103.16 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	1320 CFM *	2607 HR/YR			
НОАОН	1103.16 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	1320 CFM *	1300 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	1320 CFM *	2607 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
20110	1320 CFM *	871 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
	1/6 (10 MINUTES PER		=	0.17	
DO DEIVIAND	1/0 (10 MINOTEOTET		-		

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 04-Mar-93

DATE: BUILDING NO.:

672

BLDG. TYPE:

MOTOR POOL

ENERGY CONSTANT CALCULATIONS

				O OOF LOO MANUCEM HP	
ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4400 CFM *	871 HR/YR			
ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4400 CFM *	2607 HR/YR			
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4400 CFM *	6153 HR/YR			
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4400 CFM *	2057 HR/YR			
DDCCHC	0 kWH -	0 kWH] =	0.00E+00 kWH/CFM-HR	
	4400 CFM *	2607 HR/YR			
DDCCC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4400 CFM *	871 HR/YR			
NSC		737.55 MBtu	=	7.53E+04 Btu/UA	
	4857	UA			
DSC	737.55 MBtu -	719.43 MBtu	=	3.73E+03 Btu/UA	
-	4857	UA			
OPT	(2 HR/DAY X 272 DAY	/YR) - 294	HR/YR		
		•	=	250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
Q. 1711	(2.2.2.2	· ·	=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	
O/ III					
			<u> </u>		

E M C ENGINEERS. INC. 22-Feb-93 DATE: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 JOB: CHK: **CLIENT PROJ. ENG.: DOUG CAGE** FILE: 672BHL LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: MOTOR POOL BLDG NO: **BLDG FUNCTION: VEHICLE MAINTENANCE** # FLOORS 1 4,800 FLOOR AREA: (SQ. FT) 321 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL SOUTH **EAST** WEST · NORTH 1,770 4.706 (SQ. FT) 583 1,770 WALLS, GROSS 583 505 142 42 142 179 (SQ. FT) **GLASS** 21 42 21 0 PERSONNEL DOOR. (SQ. FT) 0 0 432 576 1,008 0 (SQ. FT) OVERHEAD DOOR, 541 441 1,138 1,031 2,324 (SQ. FT) WALLS, NET ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 4,800 42 (SQ. FT) 1,008 PERSONNEL DOOR OVERHEAD DOOR (SQ. FT) 827 142 147 378 INSULATED PANEL (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 **OUTSIDE AIR FILM** 2.02 2. 8' CMU 3. 8"CMU 4. 5. 0.68 INSIDE AIR FILM 2.87 TOTAL R-WALL = 0.348 U = 1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM BUILT UP ROOF** 0.34 2. 1.80 2" POURED GYPSUM 3. 1" INSULATION BOARD 3.33 4. BUILT-UP POOF 5. 2" POURED GYPSUM 6. - I" INSULATION BOARD INSIDE AIR FILM 0.68 TOTAL R-ROOF = 6.32 0.158 U=1/R**R-GLASS** 1.61 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. GLASS TYPE: 0.83 SLF SLAB TYPE FLOOR: CONCRETE R-PANEL 4.20 INSULATED PANEL: METAL (NO INSULATION) R-ODOOR 1.05 **OVERHEAD DOOR TYPE:** 2.56 R-PDOOR METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 0.000 X CFM / SQ.FT. = TIGHT WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) X CFM / SQ.FT. 1,304 0.277 4706 LEAKY WALL H/M/L (SQ.FT.) X CFM /OPENING /HR 1.600 = 16 DOOR OPENINGS / HR - SINGLE DOOR 0 1.385 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR == 1320 TOTAL INFILTRATION (CFM) = 0.952 960 X ODOOR 'L **UA ODOOR** = ODOOR AREA 1,008 X DOOR 'U' 16 0.391 **UA PDOOR** - PDOOR AREA 42 810 X WALL "U" 0.348 **UA WALL** = WALL AREA 2,324 760 = ROOF AREA 4,800 X ROOF 'U' 0.158 **UA ROOF** 314 X GLASS 'U' 0.621 **UA GLASS** = GLASS AREA 505 266 X SLF 0.830 = SLAB PERIM. UA SLAB 321 X PANEL "U" 197 = PANEL AREA 0.238 827 **UA PANEL** 1,366 1320 X A. T. F. 1.035 = CFM INFILTRATION TOTAL UA (BTU/HR°F) 4,689

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 27 - Mar - 93 Date: Prepared BY: Checked BY: EMC NO.:

672

ZONE

TOT. Lat (BTU/H)

TOT Sen. (BTU/H) 3,375

Latent

Rates of Heat Gain from Occupants of Conditioned Spaces

5,625

5,625

3,375

BHS CEL 672Z1

BLDG:

					-	1 -44
7000	No of	Activity		lypical	Sensible	Laneur
7		T. C.	Degree of Activity	Application	(BTU/H)	(BTU/H)
Z	reopie				210	303
7		7	Welling 3mph light machine work	Factory	3/3	670
_	9		Walking Light Light Communication Communicat			
		_				
						TOTAL
Ž	٥		;			וטואר
2	0					
			Dook Wattace Value for Lights			
_					-	

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture	1		
Š	Fixtures Type	Туре	Description		IOIRII ME
	42		6 Fluorescent 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	3,528
	ic		Fluorescent 3 - 34w Jamps, 16w ballast (2x4 ft. fixture)	118	354
	9	• •	Parameter Communication of the	09	360
	٥	2	18 Incandescent - oow		
_					
TOTAL	5.4			TOTAL	4 242
<u>י</u>	5				

Average Wattage 241 600 1500 1500 300 300	Peak Value for Internal Gains				
Fquip Description Average Wattage 1 46 Microwave Oven 241 1 24 Coffee Maker 1500 1 25 Cold Food/Beverage 1550 1 62 Television (Color, tube) 300 1 62 Television (Color, tube) 300			Heat Gain		Total
1 46 Microwave Oven 1 24 Coffee Maker 1 25 Cold Food/Beverage 1 62 Television (Color, tube)	escription	Average Wattage	to Space (%)	Total Wattage	(BTU)
or, tube)		241	50%	241	823
or, tube)		009	92%	009	2,048
or, tube)		1,500	30%	1,500	5,120
vision (Color, tube)		1,535	20%	1,535	5,239
		300	15%	300	1,024
					- 1
TOTAL		TOTAL	41%	4,176	14,253

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

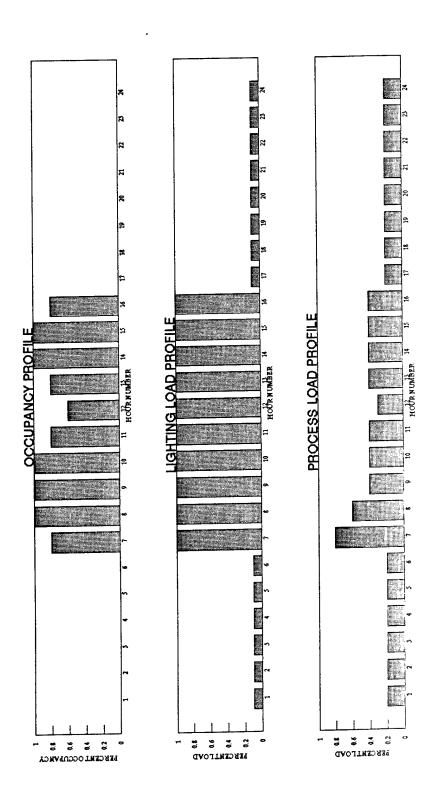
3204-000 27--Mar-93 EMC NO.:

BHS CEL 672Z1

DATE:
PREPARED BY:
CHECKED BY:
FILE:
BLDG:
ZONE:

672

																									r
BLDG	BLDG	TYPE OF										Ξ	HOUR NUMBER	OMB.	EB								:		
TYPE	FUNCTION	PROFILE	F	2	9	4	5	9	7	8	6	10	1 12	2 13	4	5	16	17	18	19	20	14 15 16 17 18 19 20 21 22	2 23	3 24	.
T L	Motor Dool	VONAGI IOOO						F	0.8	-	F	1 0.8	0	6 0.8	-	-	0.8			-	_	-	_		
)		- IGHTING	0.1	0	0	0	0.1	0.1	-	-	-	-	-	-	_	_	-	1.0	0.1	1 0.1 0.1 0	1.0	0.1 0.1 0.1 0.1	1.	1.0.1	-
		PROCESS	02 02 02	02	02	02	02	02	9.0	9.0	0.4	4	02 02 02 08 08 08 08 04 04 04 03 04 04 04 04 02 02 02 02 02 02	3	0.4	4.0	4.0	02	0.2	02 (02 (020	2 0	02 02	L.



```
BLDG 672 - MOTOR POOL BASERUN (FT LEONARD WOOD, MO)
```

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 0
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 0.000000E+00
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)

NUMBER OF ZONES (NZ)

WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK*****
 FILE NAME MO
                      YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.0000000

SOLAR ARSODRETULEN OF WALLS (ALEXANDRE)
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 1.000000
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 70368.000000
FLOOR AREA (SQFT) 4800.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 334239.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 334239.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 1320.000000
 INFILTRATION PROFILE
                                                                          .500 .500
                                                                                                        .500
                             __.500 .500 .500
                .500
  1.00 1.00 1.00 1.00 1.00
                                                                                                        1.00
                                                                          1.00
                                                                                         1.00
                                                                           .500
                                                                                          .500
                                                                                                        .500
                                                           .500
  .500 .500 .500
                                             .500
 A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

BUILDING THERMAL MASS MCP BTU/F (CMCP)

BASEMENT UA FACTOR BTU/HR-F (BSNF)

SLAB ON GRADE FACTOR BTU/HR-F (SLBF)

C COCCOCCE+CO
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 976.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .321	120.0 .335	120.0 .303	120.0 .334
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.05164 5	.05390 5	.04875 5	.05374 5
BN FACTORS BN (BN) N=1	.00022	.00023	.00021	.00023 .01397
N=2 N=3	.02959	.03088	.02793	.03079 .00852
N=4 N=5	.00022	.00023	.00021	.00023
N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS N=1	1.00000	1.00000	1.00000 -1.16550	1.00000 -1.16550
N=2 N=3	.35090	.35090	.35090	.35090 02450
N=4 N=5	.00020	.00020	.00020	.00020
NUMBER OF DN FACTORS (ND) DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6 ROOF AREA SQFT (AROF) 4800	.000000	**************************************		
ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	ES, 0=NO) 1.3146	(IROOF)	1	
.482E-03 .687E-02 .543E-02	.362E-03	.120E+04	.120E+04	
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.10 .189 SKYLIGHT TILT DEGREES (TILT)	180E-02	999. NE+00	999.	
SKYLIGHT TILT DEGREES (IIII) SKYLIGHT AZIMUTH ANGLE DEGREES SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	(AZSK)	9999.000	0000	
SKYLIGHT OVERHANG WIDTH FT (SA	FT (SKOH)	0.0000)00E+00	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S				1
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY)	HSK (MND, NO. 0.00000E	NDND) +00	292998	1
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	HR-F (SKIO) HR-F (SKI HTERNAL SPA	YUN) ACE (FAP)	1.292998 4.100000)E-01
INTERN	NAL GAINS A	AND PROFILE	es Theri	 MOSTAT SET

THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR - PEOPLE SENSIBLE 3375.	PEOPLE LATENT 5625.	HEATING	COOLING
PEAK VAL	4.	5844.	- - · - ·			
HOUR	HC	URLY FRACT			70.0	.0
1	.100	.200	.000	.000		
2	.100	.200	.000	.000	70.0	.0
	.100	.200	.000	.000	70.0	.0
3		.200	.000	.000	70.0	.0
4	.100	•		.000	70.0	.0
5	.100	.200	.000		70.0	.0
6	.100	.200	.000	.000		
7	1.000	.800	.800	.800	70.0	.0
-	1.000	.600	1.000	1.000	70.0	.0
8			1.000	1.000	70.0	.0
9	1.000	.400		1.000	70.0	.0
10	1.000	.400	1.000		• -	
11	1.000	.400	.800	.800	70.0	.0
12	1.000	.300	.600	.600	70.0	.0

SYSTEM TO SUPPLY PECONOMIC SYSTEM SYSTEM SYSTEM PER PER PER PER PER PER PER PER PER PER	ING ABOVE AMB ING BELOW AMB TYPE, (IECN) AIR CFM (SACF ZER HIGH TEMF SUPPLY AIR ST MIXED AIR TEM SIDE AIR FRAC ICIENCY (EFAN	IENT TEMP IENT TEMP M) 440 LIMIT F ART TIME OP TIME F IP(TMXAIR) ITION OF S IN. WATER	1.000 1.000 1.000 .00	1.000 1.000 1.000 .00	70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0		.0
	PLANT RATED PLANT PART I					400	.510
.100	.210	.200	.300	.300	.500	.400	.510
	.590					.800	.840
COOLING	TYPE (ITYPCE PLANT RATED PLANT RATED PLANT PART	i) OUTPUT B' INPUT BT LOAD FRAC	O TU (CFLOT) U (CFLIN) VS FRAC RA		00E-10 0E+00 PLC)	000	.000
.000	.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000				

BLDG 672 - MOTOR POOL BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

JAN	LOAD 0. -157.	GAIN	SOLAR THRU WINDOW 8.	BOOF.	PARTITI DOOR AND SLAB 0.	BSMT	WALL 0. -27.	WINDOW O. -7.	VENT AND INFL 084.	
FEB	0. -127.	GAIN LOSS		-18.	-27.	0.	-20.	-0.	0. -72.	
MAR	0. -108.	GAIN LOSS	12.	0. -16.	0. -25.	0. 0.	2. -17.	0. -5.	0. -65.	0. 0.
APR	.00 -52.51	GAIN		.00		.00	3.77 -8.17	.00 -3.38	.01 -38.14	.00
MAY	.00 -19.05	LOSS		-5.38	-10.56	.00	-3.37	-2.19	.01 -23.15	.00
	.00 -3.85		13.31	.01 -3.08	.07 -7.49	.00	6.38 79	.01 -1.57	.13 -16.85	.00
JUL	.00 -1.95		13.61	.02 -2.81	.12 -7.27	.00	45	-1.04	.24 -16.56	.00
AUG	.00 -2.23	GAIN LOSS	12.06	.01 -2.96	.09 -6.74	.00	5.51 56	.02 -1.41	.18 -15.03	.00
	.00 -16.65	LOSS		-5.12	-8.42	.00	-3.00	-1.79	.27 -19.32	.00
	-49.24	LOSS		-9.81	-13.99	.00	-0.02	2.,,,	.07 -31.94	.00
	-89.69	LOSS		-14.27	20.31				.03 -49.53	
DEC	0. -154.	GAIN LOSS	7.	0. -21.	0. -31.	o. o.	0. -27.	0. -7.	0. -81.	o. o.
		GAIN	100	0	0	٥.	37.	0.	1. -513.	
MAX MAX	HEATING COOLING	LOAD=	-33	34239. O.	BTUH ON BTUH ON	DEC 27 DEC 31	HOUR 4	AME AME	BIENT TEM BIENT TEM	P 18. P 42.

ZONE UA BTU/HR-F 3341.2

672.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 672 - MOTOR POOL BASERUN (FT LEONARD WOOD, MO)

										FAN	TOTAL
INTERNA MONTH	INTEF	ERAT	JRE F	DAY		C:	IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	69.	77.	50.	5 27	1	.5 5	64. 5.	1.11	2.39	1.43	6.91
FEB	69.	76.	58.	13 2	1	.5 3	65. 15.	.97	2.08	1.29	6.05
MAR	70.	97.	58.	12 3	1	9	73. 17.	1.06	2.29	1.39	6.62
APR	73.	103.	66.	24 2	_	L5 24	81. 66.	1.02	2.18	1.31	6.31
MAY	77.	105.	66.	29 5		13	85. 66.	1.11	2.39	1.22	6.70
JUN	81.	110.	61.	29 10		14 5	88. 66.	1.02	2.18	1.06	6.06
JUL	85.	117.	62.	6 24		14	92. 66.	1.06	2.29	1.06	6.29
AUG	83.	111.	64.	29 5		14 6	96. 66.	1.11	2.39	1.12	6.60
SEP	77.	115.	62.	24 30		15 10	85. 66.	.97	2.08	1.03	5.80
OCT	72.	99.	61.	4 24		12 4	83. 66.	1.11	2.39	1.33	6.80
NOV	70.	93.		8		13 17	77. 67.	1.06	2.29	1.37	6.61
DEC	69.	73.		23	;	15 9	70. 3.	1.02	2.18	1.42	6.42
YEAR								12.62	27.16	15.04	77.18

BLDG 672 - MOTOR POOL BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	LOADS WERE	OURS WHEN NOT MET	MAXIMUM BTU HEATING	
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	740 668 688 509 371 122 71 65 227 539 647 740 5387	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	39 29 12 0 0 0 0 0 0 0 38 118	•	3342E+063342E+063342E+062456E+061788E+056325E+059528E+051739E+062343E+063342E+063342E+06	.0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	218.03	.00	1.11	2.39	.42	6.91	4.8
FEB	182.00	.00	.97	2.08	.38	6.05	4.8
MAR	163.63	.00	1.06	2.29	.41	6.62	4.8
APR	92.03	.00	1.02	2.18	.38	6.31	4.8
MAY	44.06	.00	1.11	2.39	.36	6.70	4.8
JUN	11.53	.00	1.02	2.18	.31	6.06	4.8
JUL	6.45	.00	1.06	2.29	.31	6.29	4.8
AUG	6.44	.00	1.11	2.39	.33	6.60	4.8
SEP	33.96	.00	.97	2.08	.30	5.80	4.8
OCT	91.03	.00	1.11	2.39	.39	6.80	4.8
NOV	140.87	.00	1.06	2.29	.40	6.61	4.8
DEC	215.57	.00	1.02	2.18	.42	6.42	4.8
YEAR	1205.60	.00	12.62	27.16	4.41	77.18	4.8

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 268932. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 672.I

BLDG 672 - MOTOR POOL BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	WHEN LOADS MET HEAT	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	39	.0000	3342E+06
FEB	1464.	929.	1.000	37.	0.	0.	0	29	.0000	3342E+06
MAR	1922.	1254.	1.000	43.	0.	0.	0	12	.0000	3342E+06
APR	2312.	1600.	1.000	55.	0.	Ο.	0	0	.0000	2456E+06
MAY	2566.	1826.	1.000	65.	0.	ο.	0	0	.0000	1788E+06
JUN	2647.	1993.	1.000	72.	0.	ο.	0	0	.0000	7598E+05
JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.0000	6325E+05
AUG	2280.	1840.	1.000	76.	0.	ο.	0	0	.0000	9528E+05
SEP	1856.	1371.	1.000	68.	0.	ο.	0	0	.0000	1739E+06
OCT	1437.	953.	1.000	57.	0.	٥.	0	0	.0000	2343E+06
NOV	1039.	732.	1.000	47.	0.	ο.	0	0	.0000	3300E+06
DEC	883.	604.	1.000	35.	0.	ο.	0	38	.0000	3342E+06

BLDG 672 - MOTOR POOL NIGHT SETBACK (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 3
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 0.000000E+00
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA
*****REAL WEATHER FROM DISK*****
 FILE NAME MO
                       YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.0000000

SOLAR ARSOPRTIVITY OF MALLS (ALDIA)
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01 SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01 SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000 INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 1.000000 INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00 WOLUME OF ZONE IN CURIC FEET (VOLUME) 70368 000000
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 70368.000000
FLOOR AREA (SQFT) 4800.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 334239.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 334239.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 1320.000000
 INFILTRATION PROFILE
                                                                                                             .500
                                                                             .500 .500
                               .500 .500 .500
                .500
  1.00 1.00 1.00 1.00
                                                                                             1.00
                                                                              1.00
                                                                                                              1.00
                                                                              .500
                                                                                              .500
                                                                                                              .500
                                               .500
                                                              .500
           .500 .500
  .500
A FACTOR IN INFILTRATION EQUATION (CINA)

B FACTOR IN INFILTRATION EQUATION (CINB)

C FACTOR IN INFILTRATION EQUATION (CINC)

C FACTOR IN INFILTRATION EQUATION (CINC)

THERMAL MASS MCP BTU/F (CMCP)

1.126000

2.165000E-02

8.330000E-03

2760.000000
                                                                         1.126000
 BUILDING THERMAL MASS MCP BTU/F (CMCP)
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 266.00000
                                                               266.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 976.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

MAX SOLAR WITH NO SHADE (SOLM: U VALUE BTU/(HR-SQFT-F) (UW)	x) 120.0	120.0	120.0	120.0 .334	
U VALUE BTU/(HR-SQFT-F) (UW)	.321	.335	. 303	•••	
WALL TRANSFER FUNCTIONS	05164	.05390	.04875	.05374	
CN FACTORS (NB	.05104	5	5	5	
NUMBER OF BN FACTORS (NB	J	_			
BN FACTORS BN (BN)	.00022	.00023	.00021	.00023	
N=3 N=T	.01343	.01402	.01268	.01397	
N-2 N=3	.02959	.03088	.02793	00079	
N=A	.00819	.00855	.00773	00032	
N=5	.00022	.00023	.00021	*****	
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	*****	*****	5	5	
NUMBER OF DN FACTORS (ND)	5	5	3	•	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1 00000	1 00000	1.00000	1.00000	
N=1	1.00000	-1.16550	-1.16550	-1.16550	
N=2	35090	.35090	.35090	.35090	
N=3	02450	02450	02450	02450	
N=4	.00020	.00020	.00020	.00020	
N=5	*****	*****	*****	****	
(3505) 45	200 000000				
ROOF AREA SQFT (AROF) ROOF U VALUE BTU/HR-SQFT-F (ROOF TRANS FUNCTIONS USED (1)	URF) 1.58	0000E-01	1		
POOF TRANS FUNCTIONS USED (=YES, 0=NO)	(IROOF)	1		
POOF C TRANSFER FUNCTION (Cr	(K) T.2140	57E-02			
ROOF B TRANSFER FUNCTIONS (E	BNR)	4007104	1205+04		
400E-03 687E-02 .543E-0)2 .36ZE-U3	.120E+04	.1205+04		
ROOF D TRANSFER FUNCTIONS (I	ONR)	000	999		
ROOF D TRANSFER FUNCTIONS (I 1.00 -1.10 .189 SKYLIGHT TILT DEGREES (TILT)	180E-02	999.	999•		
SKYLIGHT TILT DEGREES (TILT)) 0.000000	9999.000	0000		
SKYLIGHT TILT DEGREES (TILT) SKYLIGHT AZIMUTH ANGLE DEGRE	SES (NOSA))			
SKYLIGHT AZIMUTH ANGLE DEGINESKYLIGHT HEIGHT FT (SKH) SKYLIGHT WIDTH FT (SKW)	0.000000E+00	,			
SKYLIGHT WIDTH FT (SKW) SKYLIGHT OVERHANG WIDTH FT	(SKOM) 0.0	00000E+00			
SKYLIGHT OVERHANG WIDTH FT OVERHANG HEIGHT ABOVE SKYLIG	GHT FT (SKOH)	0.0000	00E+00		
TOTACC MIMBED (NS)	<u> </u>				
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY SUMMER END MONTH AND DAY FOR	r (SHSK) (0.00000E+	00	1	
SUMMER START MONTH AND DAY	FOR SHSK (MS)	r, NDST)	1	1	•
SUMMER END MONTH AND DAY FOR	R SHSK (MND,	NDND)	1	-	
SKY LIGHT AREA SQFT (ASKY)	0.00000E	F00	202008		
DAYTIME SKY LIGHT U BTU/SQF	T-HR-F (SKYU))	1.292998		
SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQF' NIGHT TIME SKYLIGHT U BTU/SQF' FRACTION OF PROCESS HEAT TO	OFT-HK-F (SC.	CE (FAP)	4.10000	0E-01	
FRACTION OF PROCESS HEAT TO	DECETTE DES	101 (1111)			
WEEKEND COOLING THERMOSTAT	90.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	30.0	3011			
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
90.0 90.0 90.0	-				00 0
90.0 90.0 90.0	90.0	90.0	90.0	90.0	90.0
50.0					
WEEKEND HEATING THERMOSTAT	PROFILE		55 O	55.0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	33.0	
	FF 0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	33.0		
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0				

INTERNAL	GAINS	AND	PROFILES	
INTERNAL	GIIIII			THERMOSTAT SET
				POINT DEG F

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

HOUR		5844.	3375.				
		JRLY FRACT	ION OF PEA	.000	55.0	•	0
1	.100	.200	.000		^		0
2	.100	.200	.000	.000 .000 .000 .000 .000 .800 1.000	55.0		Ō
3	.100	.200	.000	.000	55.0		0
4	.100	.200	.000	.000	55.0		0
-	.100	.200	.000	.000	55.0		_
6	.100	.200	.000	.000	55.0	•	.0
7	1.000	.800	.800	.800	55.0	•	0
Ŕ	1.000	.600	1.000	1.000	70.0	•	. 0
ă	1.000	.400	1.000	1.000	70.0	•	. 0
10	1.000	.400	1.000	1.000	70.0	•	. 0
11	1.000	.400	.800	.800	70.0	•	. 0
12	1.000	.300	.600	.600	70.0	•	.0
12	1 000	. 400	.800	.800	70.0	•	.0
10	1 000	.400	1.000	1.000	70.0	•	.0
14 15	1 000	400	1.000	1.000	70.0	•	. 0
15	1.000	.400	1.000	1.000	70.0	•	•0
10	100	.200	.000	.000	55.0		. 0
10	100	,200	.000	.000	55.0		.0
10	100	,200	.000	.000	55.0		.0
19	100	.200	.000	.000	55.0		.0
20	100	200	-000	.000	55.0		.0
21	100	200	.000	.000	55.0		.0
22	100	200	.000	.000	55.0		.0
23	100	200	.000	.000	55.0		.0
SYSTEM TY	PE, (IECN)		_	•			
SUPPLY AI ECONOMIZE SYSTEM SU	R CFM (SACHER HIGH TEMP SPPLY AIR ST	PLIMIT F	68.0 HR 0.00	00000 0000E+00	55.0 55.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 5000000		
SUPPLY AI ECONOMIZE SYSTEM SU	R CFM (SACHER HIGH TEMP SPPLY AIR ST	PLIMIT F	68.0 HR 0.00	00000 0000E+00			
SUPPLY AI ECONOMIZE SYSTEM SU SYSTEM MI MIN OUTSI FAN EFFIC FAN TOTAL HEATING F HEATING F HEATING F	R CFM (SACE REPORT OF THE PROPERTY AIR STATEMENT OF AIR TENDER OF THE PROPERTY	M) 440 PLIMIT F FART TIME TOP TIME H MP(TMXAIR) CTION OF S N) 5.50 IN. WATER OUTPUT BTU LOAD VS FR .200	68.0 HR 0.00 R 24 70.0 ACFM (OAFF 0000E-01 (DP) 6 U (HFLOT) (HFLIN) AC OF INPU	00000 0000E+00 .000000 00000 1) 0.0000 334239.000 417800.000 TABLE (PI	000E+00 L 0000 0000 LH) .500	.400	
SUPPLY AI ECONOMIZE SYSTEM SU SYSTEM SU SYSTEM MI MIN OUTSI FAN EFFIC FAN TOTAL HEATING F HEATING F 100 .500	R CFM (SACE R HIGH TEME RPPLY AIR ST RPPLY AIR ST REPLY AIR ST REPLY (EFAR PLANT RATED PLANT RATED PLANT PART REPLANT PART	P LIMIT F PART TIME POP TIME H P(TMXAIR) CTION OF S N) 5.50 IN. WATER OUTPUT BT INPUT BTU LOAD VS FR .200 .600	68.0 HR 0.00 R 24 70.0 ACFM (OAFF 0000E-01 (DP) 6 U (HFLOT) (HFLIN) AC OF INPU	00000 0000E+00 .000000 00000 1) 0.0000 334239.000 417800.000 TABLE (PI	000E+00 L 0000 0000 LH) .500	.400	
SUPPLY AI ECONOMIZE SYSTEM SU SYSTEM SU SYSTEM MI MIN OUTSI FAN EFFIC FAN TOTAL HEATING F HEATING F .100 .500 .900 .900 CHILLER T COOLING F	PROCESSION OF THE PROCESSION O	M) 440 PLIMIT F PART TIME TOP TIME H P(TMXAIR) CTION OF S N) 5.50 IN. WATER OUTPUT BTU LOAD VS FR .200 .600 1.00 H) OUTPUT BTU INPUT BTU	68.0 HR 0.00 R 24 70.0 ACFM (OAFF 0000E-01 (DP) 6 U (HFLOT) (HFLIN) AC OF INPU .300 .680 1.00 0 U (CFLOT)	00000 0000E+00 .000000 .00000E-03 334239.000 417800.000 TTABLE (PI .300 .700	000E+00 L 0000 0000 LH) .500 .770	.400	.510 .840
SUPPLY AI ECONOMIZE SYSTEM SU SYSTEM SU SYSTEM MI MIN OUTSI FAN EFFIC FAN TOTAL HEATING F HEATING F .100 .500 .900 .900 CHILLER T COOLING F	PR CFM (SACE REPLY AIR STATE OF AIR TENDER AIR TENDER AIR TENDER AIR TENDER AIR TENDER AIR TENDER AIR TENDER AIR TENDER AIR TENDER AIR TO THE TENDER AIR TO THE TENDER AIR TO THE TENDER AIR TO THE TENDER AIR TO THE TENDER AIR TO THE TENDER AIR TO THE TENDER AIR TEN	M) 440 PLIMIT F PART TIME TOP TIME H P(TMXAIR) CTION OF S N) 5.50 IN. WATER OUTPUT BTU LOAD VS FR .200 .600 1.00 H) OUTPUT BTU INPUT BTU	68.0 HR 0.00 R 24 70.0 ACFM (OAFF 0000E-01 (DP) 6 U (HFLOT) (HFLIN) AC OF INPU .300 .680 1.00 0 U (CFLOT)	00000 0000E+00 .000000 .00000E-03 334239.000 417800.000 TTABLE (PI .300 .700	000E+00 L 0000 0000 LH) .500 .770	.400	.510 .840
SUPPLY AI ECONOMIZE SYSTEM SU SYSTEM SU SYSTEM MI MIN OUTSI FAN EFFIC FAN TOTAL HEATING F HEATING F .100 .500 .900 CHILLER T COOLING F COOLING F	R CFM (SACE R HIGH TEME R HIGH TEME R HIGH TEME R HIGH TEME R HIGH TEME R HIGH TEME R AIR ST R HIGH TEME R HIGH TE	M) 440 PLIMIT F PART TIME POP TIME H POP TIM	68.0 HR 0.00 R 24 70.0 ACFM (OAFF 0000E-01 (DP) 6 U (HFLOT) (HFLIN) AC OF INPU .300 .680 1.00 0 U (CFLOT) U (CFLIN) VS FRAC RA	00000 0000E+00 .000000 .00000E-0: 334239.000 417800.000 TTABLE (PI .300 .700 1.000000 0.000000000000000000000000	000E+00 L 0000 0000 LH) .500 .770 DE-10 E+00 LC)	.400 .800	.510 .840

BLDG 672 - MOTOR POOL NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOR AND	•			VENT AND	LATENT
MNTH	LOAD		WINDOW		25 2 2	BSMT	WALL	WINDOW	INFL O.	O.
JAN	0.	GAIN	8.	-16	-23.	0.	-17.	-5.	0. -59.	0.
	-105.	LOSS		10.	20.					00
FEB	.00	GAIN	9.58	.00	.02	.00	1.06	.00	.04	.00
	-79.68	LOSS		-12.67	-18.70	.00	-12.10	-4.01 -	.04 -48.94	.00
			11 00	00	02	. 00	2.75	.01	.05 -43.30	.00
MAR	.00	GAIN	11.92	-10 78	-16.91	.00	-8.68	-3.63 -	-43.30	.00
A DR	.00	GAIN	12.22	.00	.05	.00	4.99	.01	.10 -23.54	.00
mi	-19.93	LOSS		-5.55	-9.60	.00	-2.91	-2.07 -	-23.54	.00
					00	00	6 28	.02	.17	.00
MAY	.00	GAIN	13.30	.01	-7.32	.00	60	-1.53	-16.71	.00
	-2.76	LOSS		-3.30	-7.32					
.TIIN	.00	GAIN	13.31	.02	.07	.00	6.54	.02	.14	.00
0011	.00	LOSS		-2.63	-6.75	.00	16	-1.42	-15.50	.00
				00	1 5	00	6 47	. 03	.30	.00
JUL	.00	GAIN	13.61	-2 60	.15 -6.96	.00	20	-1.48	-16.01	.00
	.00	LOSS		-2.00	0.70					
AUG	.00	GAIN	12.06	.01	.09		5.56	.02	.17	.00
	03			-2.72	-6.34	.00	21	-1.33	-14.28	.00
				00	12	00	A 59	.03	.27	.00
SEP	.00	GAIN	10.60	-3.56	-5.75	-00	69	-1.23	-13.57	.00
	-3.00									
ОСТ	.00	GAIN	9.06	.00	.08		2.90	.02	.16	.00
001	-17.88	LOSS		-6.06	-7.88	.00	-3.05	-1.65	-18.35	.00
					0.5	00	1 26	01	. 11	.00
NOV	.00	GAIN	7.38	-0.33	-12 45	.00	-7.94	-2.61	-30.19	.00
	-4/.10	LOSS		7.55		,				
DEC	0.	GAIN	7.	0.	0.	0.	1.	0.	0. -56.	0.
DLO	-102.	LOSS		-16.	-22.	0.	-18.	-5.	-56.	0.
				•	•	^	43	٥.	2.	0.
TOT	0.	GAIN	128.	_Q1	-143.	0.	-72 .	-30.	2. -356.	0.
	-439.	TOSS		. 21.	T-10+	•				
									TWNO OPL	rp 21
MAX	HEATING	LOAD=	-33	34239.	BTUH ON	DEC 19	HOUR 3	AMB AMR	SIENT TEN	ip 42.
MAX	COOLING	LOAD=		0.	RIOH ON	חשה פד	HOUR 24	, ALL		

ZONE UA BTU/HR-F 3341.2

BEACON Energy Analysis By Energy Systems Engineers, Inc. 672-2.I BLDG 672 - MOTOR POOL NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	ERATU	RE F	DAY H		IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	59.	77.	54.	5 27	15 6	64. 4.	1.11	2.39	1.43	6.91
FEB	59.	79.	54.	13 2	15 6	65. 14.	.97	2.08	1.29	6.05
MAR	61.	95.	54.	12 4	14 6	73. 15.	1.06	2.29	1.43	6.67
APR	66.	106.	55.	24	13 6	80. 30.	1.02	2.18	1.38	6.38
MAY	73.	105.	55.	29 11	13 4	85. 38.	1.11	2.39	1.43	6.91
JUN	80.	110.	55.	29 17	14 3	88. 55.	1.02	2.18	1.38	6.38
JUL	85.	117.	57.	6 10	14 4	92. 57.	1.06	2.29	1.43	6.67
AUG	83.	111.	55.	29 25	14 6	96. 51.	1.11	2.39	1.43	6.91
SEP	75.	115.		24	15 6	85. 39.	.97	2.08	1.38	6.15
OCT	65.	99.		4	12	83. 31.	1.11	2.39	1.43	6.91
NOV	61.	93.		8	13 7	77. 18.	1.06	2.29	1.38	6.62
DEC	59.	83.		23	13 4	71.	1.02	2.18	1.43	6.43
YEAR			71.	10	•		12.62	27.16	16.85	78.99

BLDG 672 - MOTOR POOL NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF HO LOADS WERE HEATING COC	NOT MET	MAXIMUM BTU HEATING	
JAN FEB MAR APR MAY JUN JUL AUG	713 624 592 338 101 2 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	3342E+06 3250E+06 2775E+06 1887E+06 8785E+05 -313.7 .0000 1554E+05	.0000 .0000 .0000 .0000 .0000 .0000
SEP OCT NOV DEC YEAR	123 376 518 707 4 098	0 0 0 0	0 0 0 15 15	0 0 0 0	8312E+05 1380E+06 2350E+06 3342E+06 3342E+06	.0000 .0000 .0000 .0000

SYSTEM TOTALS

моптн	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	163.27	.00	1.11	2.39	.42	6.91	4.8
FEB	129.48	.00	.97	2.08	.38	6.05	4.8
MAR	108.10	.00	1.06	2.29	.42	6.67	4.8
APR	45.17	.00	1.02	2.18	.41	6.38	4.8
MAY	9.87	.00	1.11	2.39	.42	6.91	4.8
JUN	.09	.00	1.02	2.18	.41	6.38	4.8
JUL	.00	.00	1.06	2.29	.42	6.67	4.8
AUG	.35	.00	1.11	2.39	.42	6.91	4.8
SEP	11.45	.00	.97	2.08	.41	6.15	4.8
OCT	44.50	.00	1.11	2.39	.42	6.91	4.8
NOV	88.33	.00	1.06	2.29	.41	6.62	4.8
DEC	158.72	.00	1.02	2.18	.42	6.43	4.8
YEAR	759.31	.00	12.62	27.16	4.94	78.99	4.8

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 176331. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 672-2.I

BLDG 672 - MOTOR POOL NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				OIL	EK NON	ITILDI O		. • •		
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG.		YSTEM DRIFT CG. F -	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	3342E+06
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.0000	3250E+06
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.0000	2775E+06
APR	2312.	1600.	1.000	55.	0.	0.	0	0	.0000	1887E+06
MAY	2566.	1826.	1.000	65.	0.	0.	0	0	.0000	8785E+05
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.0000	-313.7
JUL	2546.	2015.	1.000	77.	ο.	0.	0	0	.0000	.0000
AUG	2280.	1840.	1.000	76.	0.	0.	0	0	.0000	1554E+05
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.0000	8312E+05
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.0000	1380E+06
NOV	1039.	732.	1.000	47.	0.	0.	0	0	.0000	2350E+06
DEC	883.	604.	1.000	35.	0.	0.	0	15	.0000	3342E+06

```
BLDG 672 - MOTOR POOL DDC (FT LEONARD WOOD, MO)
```

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 3
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 0.000000E+00
LAST CASE FLAG (1=YES, 0=NO) (LSTCS) 1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                      YEAR 1955
                                        37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SITE LATITUDE DEG (AL1)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 1.000000
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 70368.000000
FLOOR AREA (SQFT) 4800.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 334239.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 334239.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 1320.000000
INFILTRATION PROFILE
                                                                                                  .500
                                          .500
                                                         .500
                                                                      .500
                                                                                   .500
                             .500
              .500
                                                       1.00
                                                                      1.00
                                          1.00
                                                                                     1.00
                                                                                                  1.00
                           1.00
  1.00
              1.00
                                                                      .500
                                                                                  .500
                                           .500
                                                                                                 .500
                             .500
                                                       .500
               .500
  .500
A FACTOR IN INFILTRATION EQUATION (CINA) 1.126000
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
                                                             1.126000
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 2760.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 266.00000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 976.000000
WINDOW GLASS NUMBER (NG) 30
 WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
                                              MATT DAMA
```

	WALL DA:	ľA		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SOFT (AWLL)	588.0	1173.0	919.0	1298.0
WINDOW AREA SOFT (AWND)	142.0	142.0	42.0	179.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	14.2	14.2	4.2	17.9
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE (SOLM) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.321	.335	.303	.334	
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6		05200	04075	05274	
CN FACTORS	.05164	.05390	.048/5	.053/4	
NUMBER OF BN FACTORS (NB	5	5	3	3	
BN FACTORS BN (BN)	00022	00023	- 00021	.00023	
N=1	01343	.01402	.01268	.01397	
N=2	.02959	.03088	.02793	.03079	
N=3	.00819	.00855	.00773	.00852	
N=4	.00022	.00023	.00021	.00023	
N-5	*****	*****	*****	*****	
N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000	
N=2	-1.16550	-1.16550	-1.16550	-1.16550	
N=3	.35090	.35090	.35090	.35090	
N=4	02450	02450	02450	02450	
N=5	.00020	.00020	.00020	.00020	
N=6	******	*****	*****	*****	
DOOR ADEA COMP (ADOM) 480	nn . nnonnno				
ROOF U VALUE BTU/HR-SQFT-F (UROOF TRANS FUNCTIONS USED (1) ROOF C TRANSFER FUNCTION (CNI	JRF) 1.5	30000E-01			
ROOF TRANS FUNCTIONS USED (1:	=YES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CN)	R) 1.314	657E-02			
.482E-03 .687E-02 .543E-03	2 .362E-03	.120E+04	.120E+04		
POOF D TRANSFER FUNCTIONS (D)	VR)				
1.00 -1.10 .189	180E-02	999.	999.		
SKYLICHT TILT DEGREES (TILT)	0.00000	DE+UU			
SKYLIGHT AZIMUTH ANGLE DEGRE	ES (AZSK)	9999.000	0000		
SKYLIGHT HEIGHT FT (SKH)	0.00000E+0	0			
SKYLIGHT WIDTH FT (SKW) U	. UUUUUUE+UU				
SKYLIGHT OVERHANG WIDTH FT (SKOW) U.	000000000000000000000000000000000000000			
OVERHANG HEIGHT ABOVE SKYLIGH	HT FT (SKOH) 0.0000	00E+00		
CENT TOUR OF ACC NUMBER (NC)	1				
SKYLIGHT SHADING COEFFICIENT	(SHSK)	0.00000E+0	00		
SUMMER START MONTH AND DAY FO	OR SHSK (MS	T, NDST)	1		1
SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FO SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY)	SHSK (MND,	NDND)	1	1	
SKY LIGHT AREA SQFT (ASKY)	0.00000E	+00			
DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQ	-HR-F (SKYU) 1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQ	FT-HR-F (SK	YUN)	1.292998	NT 01	
FRACTION OF PROCESS REAT TO	THIEVNAM DE	ACE (FAP)	4.100000	DE-OI	
WEEKEND COOLING THERMOSTAT P	ROFILE		000	000	000
.000 .000 .000	.000	.000	.000	.000	.000
		000	000	.000	.000
.000 .000 .000	.000	.000	.000	.000	.000
	200	000	000	.000	.000
.000 .000 .000	.000	.000	.000	.000	.000
WEEKEND HEATING THERMOSTAT P		F.F. C	EE 0	EE 0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
	FF 0	EE 0	EE 0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	55.0	33.0	55.0
	FF 0	EE 0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	55.0	35.0	22.0	33.0

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
5625.
          4. 5844. 3375.
PEAK VAL
         - - - - HOURLY FRACTION OF PEAK - - - -
 HOUR
55.0
         .100 .200 .000 .000
  1
                                      .000
                                                55.0
          .100
                             .000
                                                             .0
                                                             .0
                                                             .0
                                                              .0
                                                              .0
                                                              .0
                                                              .0
                                                             .0
                                                              .0
                                                              .0
                                                              .0
                                                              .0
                                                              .0
                                                              .0
                                                              .0
                                                             .0
                                                             .0
                                                             .0
                                                             .0
SYSTEM TYPE, (IECN) 0
SUPPLY AIR CFM (SACFM) 4400.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 0.000000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 6.000000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 334239.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 417800.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                           .500
                                                       .400
                                                               .510
         .210
                  .200
                          .300 .300
                            .680
                                    .700
                                            .770
                                                      .800
                                                               .840
                   .600
          .590
 .500
.900 .910 1.00 1.00 CHILLER TYPE (ITYPCH) 0
COOLING PLANT RATED OUTPUT BTU (CFLOT) 1.000000E-10 COOLING PLANT RATED INPUT BTU (CFLIN) 0.000000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                .000 .000 .000 .000
                                                      .000
                                                               .000
 .000
        .000
                                                               .000
                                                     .000
      .000 .000 .000 .000
 .000
                           .000
                 .000
 .000
      .000
```

BLDG 672 - MOTOR POOL DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

		SOLAR THRU		PARTIT DOOR AND				VENT AND	
MNTH LOAI)	WINDOW	ROOF	SLAB	BSMT	WALL	WINDOW		LATENT O.
JAN (). GAIN		71				0. -5.	•	o.
-102	. Loss								
FEB .0	00 GAIN 24 LOSS	9.58	.00 -12.42	.01 -18.29	.00	1.14 -11.77	.00 -3.93 -	.03 47.65	.00
MAR .(O GAIN	11.92	.00	.02	.00	2.88	.01	.05	.00
-59.	7 LOSS		-10.54	-16.53	.00	-8.40	-3.54 -	42.10	.00
APR .		12 22	00	05	00	5.08	.01	.10	.00
APR -0	98 LOSS	12.22	-5.45	-9.44	.00	-2.83	-2.04 -	23.05	.00
MAY .		13.30	.01 -3.33	.09 -7.28	.00	6.31 _ 50	-1 52 -	.17 16.59	.00
	52 LOSS								
JUN .	OO GAIN	13.31	.02	.07	.00	6.54	.02	.14	.00
	00 Loss		-2.63	-6.75	.00	16	-1.42 -	15.50	.00
JUL .	OO GAIN	13.61	.02	.15	.00	6.47	.03	.30	.00
. (-2.60	-6.96	.00	20	-1.48 -	16.01	.00
AUG .	10 CATN	12.06	0.1	09	.00	5.56	.02	.17	.00
	OG GAIN			-6.34	.00	21	-1.33 -	14.28	.00
					00	4 60	.03	27	.00
SEP .	DO GAIN B7 LOSS	10.60	-3 55	-5.73	.00	68	-1.22 -	13.51	
OCT .		9.06	.00	.08	.00	2.98	.02 -1.61 -	.16 .17 71	.00
	60 LOSS		•						•00
NOV .	OO GAIN	7.38	.00	.06	.00	1.30	.01	.11	.00
	22 LOSS		-9.14	-12.13	.00	-7.65	-2.55 -	-29.24	.00
השר <u>י</u>	OO GATN	6.86	.00	.02	.00	.55	.01	.06	.00
DEC .	47 LOSS	0.00	-15.40	-21.45	.00	-17.25	-4.53 -	-54.76	.00
TOT -42	U. GAIN	128.	-89 ₋	-141.	0.	-70 .	-30.	-348.	õ.
42	J. <u>1</u> 000				3.				
		_	14220	יאר עוויים	DEC 19	אווים 11	AMRI	ישתי יינאי	P 11.
MAX HEAT	ING LOAD:	= -33 =	0. °€	BTUH ON	DEC 10	HOUR 24	AMB]	ENT TEM	P 42.
THAT COOL					_				

ZONE UA BTU/HR-F 3341.2

BEACON Energy Analysis By Energy Systems Engineers, Inc. 672-1.I

BLDG 672 - MOTOR POOL DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI	JRE F	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH		HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	58.	78.	54.	5 27	1	64. 6 4.	1.11	2.39	1.43	6.91
FEB	59.	79.	54.	13 2		5 65. 6 14.	.97	2.08	1.29	6.05
MAR	61.	95.	54.	12 4		4 73. 6 15.	1.06	2.29	1.43	6.67
APR	66.	106.	55.	24 9		3 80. 6 30.	1.02	2.18	1.38	6.38
MAY	73.	105.	55.	29 11	_	3 85. 4 38.	1.11	2.39	1.43	6.91
JUN	80.	110.	55.	29 17	_	4 88. 3 55.	1.02	2.18	1.38	6.38
JUL	85.	117.	57.	6 10	_	4 92. 4 57.	1.06	2.29	1.43	6.67
AUG	83.	111.	55.	29 25		4 96. 6 51.	1.11	2.39	1.43	6.91
SEP	74.	115.	55.	24 15		5 85. 6 39.	.97	2.08	1.38	6.15
OCT	65.	99.	55.	4 28		2 83. 5 31.	1.11	2.39	1.43	6.91
NOV	61.	93.	54.	8		3 77. 7 18.	1.06	2.29	1.38	6.62
DEC	58.	83.	47.	23 18		3 71. 4 1.	1.02	2.18	1.43	6.43
YEAR					•.		12.62	27.16	16.85	78.99

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	LOADS WERE	OURS WHEN NOT MET	MAXIMUM BTU HEATING	
MONTH	HEATING	ECONOMIAEN	IIIIII IIII			
JAN FEB	708 619	0	0 0	0 0	3339E+06 3123E+06	.0000
MAR	586	Ö	0	0	2646E+06	.0000
APR	334	Ō	0	0	1768E+06	.0000
MAY	93	. 0	0	0	8784E+05	.0000
JUN	2	. 0	0	0	-313.7	.0000
JUL	Ö	0	0	0	.0000	.0000
AUG	4	0	0	0	1554E+05	.0000
SEP	119	0	0	0	8309E+05	.0000
OCT	363	0	0	0	1360E+06	.0000
NOV	507	0	0	0	2294E+06	.0000
DEC	706	0	13	0	3342E+06	.0000
YEAR	4041	0	13	0	3342E+06	.0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	160.13	.00	1.11	2.39	.42	6.91	4.8
FEB	126.43	.00	.97	2.08	.38	6.05	4.8
MAR	105.14	.00	1.06	2.29	.42	6.67	4.8
APR	43.82	.00	1.02	2.18	.41	6.38	4.8
MAY	9.13	.00	1.11	2.39	.42	6.91	4.8
JUN	.09	.00	1.02	2.18	.41	6.38	4.8
JUL	.00	.00	1.06	2.29	.42	6.67	4.8
AUG	.35	.00	1.11	2.39	.42	6.91	4.8
SEP	11.07	.00	.97	2.08	.41	6.15	4.8
OCT	42.12	.00	1.11	2.39	.42	6.91	4.8
NOV	85.63	.00	1.06	2.29	.41	6.62	4.8
DEC	156.15	.00	1.02	2.18	.42	6.43	4.8
YEAR	740.07	.00	12.62	27.16	4.94	78.99	4.8

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 172322. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 672-1.I

BLDG 672 - MOTOR POOL DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYSTEMP. DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	3339E+06
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.0000	3123E+06
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.0000	2646E+06
APR	2312.	1600.	1.000	55.	0.	0.	0	0	.0000	1768E+06
MAY	2566.	1826.	1.000	65.	0.	0.	0	0	.0000	8784E+05
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.0000	-313.7
JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.0000	.0000
AUG	2280.	1840.	1.000	76.	0.	0.	0	0	.0000	1554E+05
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.0000	8309E+05
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.0000	1360E+06
NOV	1039.	732.	1.000	47.	0.	٥.	0	0	.0000	2294E+06
DEC	883.	604.	1.000	35.	0.	0.	0	13	.0000	3342E+06

COMPUTER SIMULATIONS

BUILDING 730

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 04-Mar-93

DATE: BUILDING NO.:

730

BLDG, TYPE:

BARRACKS

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	2797.5	2601.8				
COOLING (kWH)						

SUPPLY AIR FAN	0 CFM
FLOOR AREA	40986 FT ²
CFMI	3167 CFM
UA	9330 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON RUN DEFINITION:							
BASERUN	EXISTING OPERATION						
RUN1	NIGHT SETBACK						
RUN2	DDC CONTROL						
RUN3	ECONOMIZER						
RUN4	NIGHTIME INFILTRATION (OA)						
RUN5	DAYTIME INFILTRATION (OA)						

HOURS OF	OCCUPANCY			ANNUAL HEATING & COOLING HOURS		
M-F	0	2400	120 HR	HR. ON HEATING	4368 HR/YR	
SAT.	0	2400	24 HR	HR. ON COOLING	2928 HR/YR	
SUN.	0	2400	24 HR	HR. OFF HEATING	0 HR/YR	
00.11	TOTAL OCCU	PY HR.	168 HR/WK	HR. OFF COOLING	0 HR/YR	
	TOTAL UNOCC. H		0 HR/WK			
	ANNUAL OCC	ANNUAL OCCUPY HR.				
	ANNUAL UNC		0 HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 4368 = 0 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 2928 = 0 HR/YR

HOAUHC	2797.5 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	3167 CFM *	0 HR/YR		
HOAUH	2797.5 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	3167 CFM *	0 HR/YR		
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	3167 CFM *	0 HR/YR		
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	3167 CFM *	0 HR/YR		
HOAOHC	2797.5 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	3167 CFM *	8760 HR/YR		
HOAOH	2797.5 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	3167 CFM *	4368 HR/YR		
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	3167 CFM *	8760 HR/YR		
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	3167 CFM *	2928 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

04-Mar-93

DATE: BUILDING NO.: BLDG. TYPE:

730 **BARRACKS**

ENERGY CONSTANT CALCULATIONS

ECC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	0 CFM *	2928 HR/YR			
ECHC	0 kWH -	0 kWH	_	0.00E+00 kWH/CFM-HR	
	0 CFM *	8760 HR/YR			
NSUCHO	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	0 CFM *	0 HR/YR			
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	0 CFM *	0 HR/YR			
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	0 CFM *	8760 HR/YR			
DDCCC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFMHR	
	0 CFM *	2928 HR/YR			
NSC	2797.5 MBtu -	2601.8 MBtu	_	2.10E+04 Btu/UA	
	9330	UA			
DSC	2601.8 MBtu -	0 MBtu	_	2.79E+05 Btu/UA	
	9330	UA			
OPT	(2 HR/DAY X 272 DAY/	YR) – 294	HR/YR		
			=	0 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
			=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	

E M C ENGINEERS, INC. DATE: 09-Feb-93 BY: BHS PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 730BHL FILE: **LOCATION: FT LEONARD WOOD BUILDING HEATING LOAD CALCULATION SHEET** 730 BLDG NAME: BARRACKS (WITHOUT A/C) BLDG NO: **BLDG FUNCTION:** # FLOORS 40,986 FLOOR AREA: (SQ. FT) 514 SLAB PERIMETER: (FT) 1. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) **EAST** WEST **TOTAL** NORTH SOUTH 21,866 9,088 9,088 1,845 1,845 (SQ. FT) WALLS, GROSS 938 19 435 17 (SQ. FT) 467 GLASS 0 120 80 40 0 (SQ. FT) PERSONNEL DOOR 468 217 9 9 233 **INSULATED PANEL** (SQ. FT) 8,396 1,817 20,341 1,819 8,308 WALLS, NET (SQ. FT) 13,662 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 120 468 PERSONNEL DOOR (SQ. FT) INSULATED PANEL (SQ. FT) 0 0 0 0 0 (SQ. FT) **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) **R-VALUE** COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 4" FACE BRICK 0.43 2. 0.91 3. AIR SPACE 3.00 4. 4"CMU / 9" L.W. CONC 4"FACE BRICK 5. AIR SPACE 6 4"CMC 0.68 INSIDE AIR FILM 5.19 TOTAL R-WALL = 0.193 U = 1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) **OUTSIDE AIR FILM** 0.17 **BUILT UP ROOF** 0.34 2. BUILT-UP ROOF 6.68 3. 2" INSULATION 2" INSULATION 6.25 4. 7" L.W. CONCRETE 7" L.W. CONCRETE 5. A 6. 0.68 INSIDE AIR FILM TOTAL R-ROOF = 14.12 0.071 U=1/R R-GLASS 1.61 PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. **GLASS TYPE:** 0.83 SLF CEMENT SLAB TYPE FLOOR: 0.00 R-BASEM NONE **BASEMENT TYPE:** 4.20 R-PANEL INSULATED PANEL: R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0 0.042 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 3,018 0.138 X CFM / SQ.FT. 21866 AVG. WALL H/M/L (SQ.FT.) 0 X CFM / SQ.FT. 0.000 = LEAKY WALL H/M/L (SQ.FT.) 80 X CFM /OPENING /HR 1.600 == DOOR OPENINGS / HR - SINGLE DOOR 69 X CFM /OPENING /HR 1.385 = DOOR OPENINGS / HR - DOUBLE DOORS 3167 TOTAL INFILTRATION (CFM) = 111 0.238 X PANEL 'U' = **UA PANEL** = PANEL AREA 468 47 0.391 X DOOR 'U' ᆓ **UA PDOOR ≖ PDOOR AREA** 120 3,917 0.193 X WALL 'U' UA WALL 19.873 ** = WALL AREA 968 X ROOF 'U' 0.071 = ROOF AREA 13,662 **UA ROOF** 0.621 582 X GLASS 'U' 938 **UA GLASS** = GLASS AREA 427 514 X SLF 0.830 = = SLAB PERIM. **UA SLAB** 0 X BASE. 'U' =B-WALL AREA 0 0.000 **UA BASEM** 3,278 X A. T. F. 1.035 INFILTRATION CFM 3167 TOTAL UA (BTU/HR°F) 9,330

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 27 -- Mar -- 93

EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

CEL

ZONE:

730ZN1	730
	•••
• •	Ö

	Sensible Latent 101 Sen. 101. Lat	10101	103 64,150 38,270		TOTA! 84 450 30 370		
Rates of Heat Gain from Occupants of Conditioned Spaces		No. People Type Degree of Activity Application	Theater, Movie	1 274		TOTAL 374	

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			
ž		Z	Description	Watts/Fixture	Total Wattage
	18	r	5 Fluorescent 1 - 34w Jenn. 16w ballast (1x4 ft. fixture)	20	006
	26		a Fluorescent 2 - 34w lemns 16w ballast Cx4 ft. fixture)	84	6,384
	9		o Fluorescent 4 - 34w lamps 2 - 16w hallasts Ox4 ft fix	168	10,752
	\$ 5		18 Incordescent – 60w	99	6,120
	701				
				14.4	24 450
TOTAL	560			IOIAL	001,42

			Peak Value for Internal Gains				
Zone	No. of Equip.	Equip.		Average Wattage to Space (%)	Heat Gain to Space(%)	Total Wattage	Total (BTU)
OZ	Eduibmen	ad A	Moching Machine (Aut	512	50%	3,072	10,485
_	0 0		So Washing Machine (Automate)	4,856	45%	29,136	99,441
	0		COURS DIVE				
				TOTAL	43%		32,208 109,926

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41 –92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE

LOCATION: FT. LEONARD WOOD

3204-000 EMC NO.: DATE:

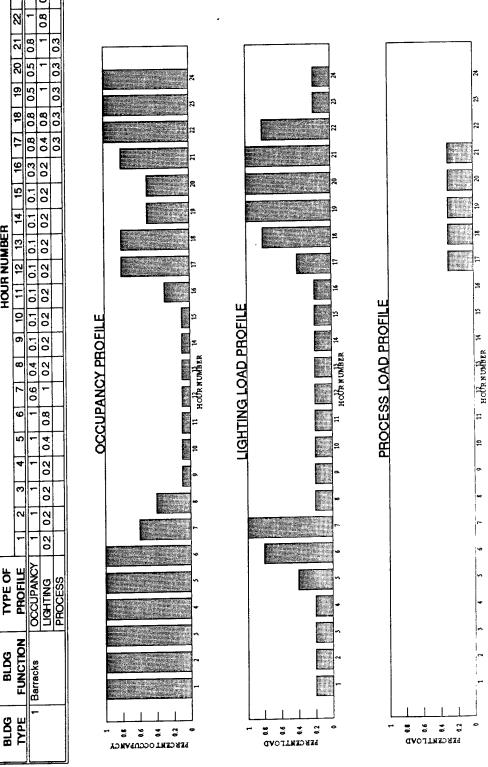
27 - Mar -93 PREPARED BY: CHECKED BY:

CEL 730ZN1 730

FILE: BLDG:

ZONE:

02 23 24 02 19 20 21 22 0.8 03 03 03 03 0.8 0.5 0.5 15 16 17 18 9.0 0.4 0.8 0.1 0.3 0.8 12 13 14 02 02 02 0.1 0.1 0.1 HOUR NUMBER 0.1 0.1 0.4 0.1 02 02 9.0 9 0.8 0.4 02 02 02 02 PROFILE
OCCUPANCY
LIGHTING
PROCESS TYPE OF BLDG FUNCTION Barracks



BLDG 730 - BARRACKS WITHOUT A/C BASERUN (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 0
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

1.000000

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
 STATION 13995
                                          YEAR 1955
SITE LATITUDE DEG (AL1) 37.750000

ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
 SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 SOLAR REFLECTANCE OF GROUND (RIGHT OF TAX TEMPORATURE OF BUILDING DEG F (TAO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00

0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
  FLOOR AREA (SQFT) 40986.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000
 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
  CONSTANT INFILTRATION RATE CFM (CFMI) 3167.000000
  INFILTRATION PROFILE
                                                                                                                                                                                            .670
                                                                              .670 .670 .670 .670
                                                        .670
                            .670
     .670
                   1.00 1.00 1.00 1.00 1.00
                                                                                                                                                                                             1.00
     1.00
                                                                                                                                                                                            .670
                                                                                                                                                               .670
                   1.00 .670 .670 .670
    1.00
  A FACTOR IN INFILTRATION EQUATION (CINA) 4.350000E-01
  B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
  C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-0
BUILDING THERMAL MASS MCP BTU/F (CMCP) 231200.000000
  BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
  PARTITION UA BTU/HR-F (GUA)
DOOR UA BTU/HR-F (DUA)
WINDOW GLASS NUMBER (NG)

0.000000E+00
47.000000
30
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                                                                          WALL DATA
  WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

1 2 3 4
4 0 90.00
180.00 -90.00
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
1826.0
18
                                                                                                                        2
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS	120.0	120.0	120.0 .194	120.0 .194
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	. 1 7 4	.175		
WALL TRANSFER FUNCTIONS	.01454	.01447	.01454	.01454
NUMBER OF BN FACTORS (NB	5	5	5	5
BN FACTORS BN (BN)				00000
N=1	.00002	.00002	.00002	.00002
N=2	.00224	.00223	.00224	00224
N=3	.00805	.00801	.00805	00303
N=4	.00394	.00392	000394	.00029
N=5	.00029	.00029	******	****
N=6	*****	*****	5	5
NUMBER OF DN FACTORS (ND)	5	5	J	•
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1 00000	1 00000	1,00000	1.00000
N=1	_1.00000	-1.50943	-1.50943	-1.50943
N=2	65654	.65654	.65654	.65654
N=3	- 07415	07415	07415	07415
N=4	00212	.00212	.00212	.00212
N=5	*****	*****	*****	*****
N=6 ROOF AREA SQFT (AROF) 13662	000000			
ROOF AREA SQFT (AROF) 15002	F) 7.10	0000E-02		
ROOF TRANS FUNCTIONS USED (1=Y)	ES. O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	1.1779	55E-03		
.000 .121E-03 .613E-03	.403E-03	.403E-04	806.	
minimatone (DND	1			
- 46 F33	_ 6116-61	.820E-03	999.	
ASSIST TATION MITTO DECIDENCE (1111/11)	0.00000	/E / UU		
			000	
SKYLIGHT AZIMOTH ANGLE DEGREES SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00)		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
SKYLIGHT WIDTH FI (SKW) SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT	OW) 0.0	00000E+00	005+00	
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	005+00	
SKYLIGHT GLASS NUMBER (NS)	1		10	
SKYLIGHT SHADING COEFFICIENT (SHSK) (MST	NDST)	1	1
SUMMER START MONTH AND DAY FOR	nen (mar	ו מאחו	1	1
SUMMER END MONTH AND DAI FOR S	0.000000E+	-00		
SKY LIGHT AREA SQFI (ASKI)	R-F (SKYU)	1.	292998	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	(NU)	1.292998	
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	4.300000)E-01

-----INTERNAL GAINS AND PROFILES -----THERMOSTAT SET
POINT DEG F

					101111	
	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	24.	47268.	84150.	39270.		
HOUR	HO	OURLY FRACT	TION OF PE	AK		•
1	.200	.000	1.000	1.000	72.0	.0
2	.200	.000	1.000	1.000	72.0	.0
2	.200	.000	1.000	1.000	72.0	.0
3		.000	1.000	1.000	72.0	.0
4	.200		1.000	1.000	72.0	.0
5	.400	.000			72.0	.0
6	.800	.000	1.000	1.000		.0
7	1.000	.000	.600	.600	72.0	
8	.200	.000	.400	.400	72.0	.0
9	.200	.000	.100	.100	72.0	.0
-	.200	.000	.100	.100	72.0	.0
10		.000	.100	.100	72.0	.0
11	.200		.100	.100	72.0	.0
12	.200	.000	.100	.100	. 2	

```
.0
                                             .100
                                                          72.0
                        .000
             .200
                                  .100
  13
                                             .100
                                                                        .0
                                                         72.0
             .200
                                  .100
                        .000
  14
                                             .100
                                                         72.0
                                                                        .0
                                  .100
            .200
                        .000
  15
                                                                        .0
                                  .300
                                             .300
                                                         72.0
            .200
                        .000
  16
                                                         72.0
                                                                        .0
                                             .800
                                  .800
                        .300
             .400
  17
                                                         72.0
                                                                        .0
                                             .800
                        .300
                                  .800
             .800
  18
                                                                        .0
                                             .500
                                                          72.0
                        .300
                                  .500
            1.000
  19
                                                                        .0
                                             .500
                                                          72.0
                        .300
                                 .500
            1.000
  20
                                  .800
                                                                        .0
                                                          72.0
                                             .800
                        .300
            1.000
  21
                                                                        .0
                                                          72.0
                                 1.000
                                            1.000
                        .000
             .800
  22
                                                                        .0
                                                          72.0
                        .000
                                            1.000
                                  1.000
             .200
  23
                                                                       .0
                                                          72.0
                                 1.000
                                           1.000
             .200
                        .000
  24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 0.000000E+00
SYSTEM TYPE, (IECN)
                           2
                        0.00000E+00
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 0.000000E+U SYSTEM SUPPLY AIR STOP TIME HR 55.000000
                                   0.000000E+00
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                             0.00000E+00
FAN EFFICIENCY (EFAN) 1.000000E-05
FAN TOTAL PRESSURE IN. WATER (DP)
                                        0.00000E+00
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1700000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2125000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                 .400
                                                                            .451
                                                      .369
                                .286
                                          .300
                      .200
            .191
 .100
                                                                            .812
                                                                 .800
                                                      .718
                                           .700
                      .600
                                 .625
            .537
 .500
                                 1.00
                      1.00
 .900
            .906
CHILLER TYPE (ITYPCH)
                                 0
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                           1.000000E-10
COOLING PLANT RATED INPUT BTU (CFLOT) 1.000000E-10
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                            34.5
                                                      28.5
                                                                 40.0
                                           30.0
                                 22.0
                      20.0
            16.0
 10.0
                                                                 80.0
                                                                            71.5
                                                      60.0
                                           70.0
            42.5
                       60.0
                                 50.0
 50.0
                                 100.
                      100.
 90.0
           85.0
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730.I

BLDG 730 - BARRACKS WITHOUT A/C BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITN DOOR				VENT AND	
			THRU	POOF	SLAR	BSMT	WALL	WINDOW		LATENT
MNTH	LOAD	CATN	MINDOM	1001	0.	0.	0.	0.	0.	0.
JAN	0.	GAIN	13.	-28	-1.	o.	-90.	-14.	0. -326.	0.
	-381.	TO22								
	0.	CATN	16	0.	0.	0.	0.	0.	0. -276.	o.
FEB			10.	-25.	-1.	0.	-69.	-12.	-276.	0.
	-307.									
	0	CATM	20	٥.	0. -1.	0.	4.	0.	0.	
MAR	0.	GAIN	20.	-22	-1.	0.	-56.	-11.	-245.	ο.
	-245.	TOSS								
	0	CATA	20	0	0. -1.	0.	10.	0.	1.	Ο.
APR	0.	GAIN	20.	_14	-1.	0.	-30.	-7.	-139.	0.
	-96.									
		CA TAI	22 17	00	.00	.00	14.87	.05	.77	.00
MAY	.00	GAIN	22.11	-9.26	47	.00	-17.38	-4.75	-84.96	.00
	-12.99	TOSS		-0.20	• • •					
	00	CATN	22 84	00	.00	.00	15.78	.02	.26	.00
JUN	.00	GAIN	22.04	-7 05	42	.00	-14.56	-4.32	-74.92	.00
T 11T	.00	CAIN	23 13	.00	.01	.00	16.24	.06	1.00 -78.56	.00
JUL	.00	LOSS	23.13	-7.05	43	.00	-15.29	-4.43	-78.56	.00
	• • • •									
AUC	00	GATN	19.94	.00	.01 43	.00	13.90	.08	1.43	.00
AUG	.00	LOSS		-7.32	43	.00	-15.87	-4.33	-74.79	.00
										00
SEP	- 00	GAIN	16.90	.00	.01	.00	11.72	.09	1.69 -82.58	.00
022	-16.25	LOSS		-8.76	43	.00	-17.99	-4.45	-82.58	.00
								_	_	•
ОСТ	0.	GAIN	15.	0.	0.	0.	6.	0.	1.	0.
001	-85.	LOSS		-14.	-1.	0.	-32.	-6.	-120.	0.
								_	•	•
NOV	0.	GAIN	12.	0.	0. -1.	0.	2.	0.	0.	0.
	-186.	LOSS		-19.	-1.	0.	-52.	-9.	-183.	0.
						_	_	•	0	0.
DEC	0.	GAIN	12.	0.	0.	0.	0.	10.	210	0.
	-367.	LOSS		-30.	-1.	0.	-91.	-13.	0. -310.	0.
TOT	0.	GAIN	215.	0.	0.	0.	94.	03 03	8. -1996.	Õ.
	-1696.	LOSS		-189.	-9.	υ.	-500.	-33.	1990.	•
						DEG 10	מווסם	ZM I	атемт тем	p 3.
MAX	HEATING	LOAD=	-122	1352.	BIUH ON	DEC 31	HOUR 3	ZMI	BIENT TEM BIENT TEM	P 42.
MAX	COOLING	LOAD=		0.	RIOH ON	DEC 31	DOUR 24	FILL		

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730.I BLDG 730 - BARRACKS WITHOUT A/C BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI MAX	JRE F	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	72.	72.	71.	4	18 1		7.64	5.11	.00	65.84
FEB	72.	73.	71.	9 2	22		6.90	4.62	.00	59.46
MAR	72.	78.	71.	28 3			7.64	5.11	.00	65.84
APR	74.	84.	72.	30 9			7.39	4.95	.00	63.71
MAY	79.	90.	72.	29 11		2 68. 4 38.	7.64	5.11	.00	65.84
JUN	85.	95.	77.	29 17			7.39	4.95	.00	63.71
JUL	89.	98.	77.	15 24			7.64	5.11	.00	65.84
AUG	88.	95.	76.	29 26			7.64	5.11	.00	65.84
SEP	81.	94.	72.	2 18		2 79. 9 66.	7.39	4.95	.00	63.71
OCT	74.	86.	72.	4 13			7.64	5.11	.00	65.84
NOV	72.	79.	71.	8 14		_	7.39	4.95	.00	63.71
DEC	72.	72.	71.	23 18		1 52. 9 3.	7.64	5.11	.00	65.84
YEAR							89.95	60.18	.00	775.16

730.I

BLDG 730 - BARRACKS WITHOUT A/C BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING		OURS WHEN	MAXIMUM BTU	
MONTH	HEATING	ECONOMIZER	HEATING COC		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	740 659 639 363 97 0 0 117 408 591 740	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	1112E+07 1013E+07 1056E+07 5931E+06 3199E+06 .0000 .0000 .0000 2777E+06 4730E+06 7336E+06	.0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
YEAR	4354	0	0	0	1221E+07	.0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	585.68	.00	7.64	5.11	.00	65.84	24.2
FEB	486.06	.00	6.90	4.62	.00	59.46	24.2
MAR	418.71	.00	7.64	5.11	.00	65.84	24.2
APR	193.69	.00	7.39	4.95	.00	63.71	24.2
MAY	41.52	.00	7.64	5.11	.00	65.84	24.2
JUN	.00	.00	7.39	4.95	.00	63.71	24.2
JUL	.00	.00	7.64	5.11	.00	65.84	24.2
AUG	.00	.00	7.64	5.11	.00	65.84	24.2
SEP	49.64	.00	7.39	4.95	.00	63.71	24.2
OCT	194.11	.00	7.64	5.11	.00	65.84	24.2
NOV	349.25	.00	7.39	4.95	.00	63.71	24.2
DEC	569.97	.00	7.64	5.11	.00	65.84	24.2
YEAR	2888.63	.00	89.95	60.18	.00	775.16	24.2

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 79437. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730.I

BLDG 730 - BARRACKS WITHOUT A/C BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

				0111						
	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	ο.	0	0	.0000	1112E+07
FEB	1421.	901.	1.000	37.	0.	ο.	0	0	.0000	1013E+07
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.0000	1056E+07
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	5931E+06
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.0000	3199E+06
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.0000	.0000
JUL	2470.	1954.	1.000	77.	0.	ο.	0	0	.0000	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	.0000
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.0000	2777E+06
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.0000	4730E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	7336E+06
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.0000	1221E+07

BLDG 730 - BARRACKS WITHOUT A/C DDC (FT LEONARD WOOD, MO)

```
PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
NUMBER OF ZONES (NZ)
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                        YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

2.000000E-01
INITIAL TEMPOF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 437184.000000
FLOOR AREA (SQFT) 40986.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1664120.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 409860.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 3167.000000
 INFILTRATION PROFILE
                                .670 .670 .670 .670
                                                                                                                  .670
               .670
  .670
                                                                                 1.00
                                                                                                 1.00
                                                                                                                    1.00
  1.00 1.00 1.00 1.00 1.00
                                                                                 .670
                                                                                                  .670
                                                                                                                  .670
                                                                 .670
                                                 .670
  1.00 1.00
                                .670
A FACTOR IN INFILTRATION EQUATION (CINA) 4.350000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 231200.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 0.000000E+00
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 47.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00
WALL AREA SQFT (AWLL) 8613.0 1828.0 8541.0 1826.0
WINDOW AREA SQFT (AWND) 435.0 18.5 467.0 17.2
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 43.5 1.9 46.7 1.7
WIDTH OF OVERHANG (WOH) 2.5 2.5 2.5
OVERHANG HGT ABV WNDW(HOH) 1.0 1.0 1.0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .194	120.0 .193	120.0 .194	120.0 .194
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	04.54	01447	01454	01454
CN FACTORS	.01454	.01447 5	5	5
NUMBER OF BN FACTORS (ND	3	•		
N=1	.00002	.00002	.00002	.00002
N=2	.00224	.00223	.00224	.00224
N=3	.00805	.00801	.00805	00394
N=4	.00394	000392	.00029	.00029
N=5	******	*****	*****	*****
N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS				1 00000
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	_1 50943
N=2	-1.50943	-1.50943	65654	.65654
N=3	.05054 07415	07415	07415	07415
N=4	.00212	.00212	.00212	.00212
N=5 N=6	*****	****	*****	*****
TORM (ABOV) 13662	000000			
ROOF AREA SQFT (AROF) ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y	F) 7.10	0000E-02		
ROOF TRANS FUNCTIONS USED (1=Y	ES, 0=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	1.1//9	55E-03		
TAAT D MOINTERED BUNCHIONS INNE	1			
.000 .121E-03 .613E-03	.403E-03	.4035-04	800.	
ROOF D TRANSFER FUNCTIONS (DAR	/ 611E-01	.820E-03	999.	
ROOF D TRANSFER FUNCTIONS (DNR 1.00 -1.46 .533 SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
- ARREST TAUM ATTMITTU ANGLE DEGREES	(AZSK)	JJJJ.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.	OOOOOOE+OC)		
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00	00000E+00		
SKYLIGHT WIDTH FT (SKW) 0.0 SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT	OW) ORC	0.000	00E+00	
ATTIT TOTAL OF NO MIMPED (NS)	1			
SKYLIGHT GLASS NOMBER (NO) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK) C	.00000E+0	00	_
SUMMER START MONTH AND DAY FOR	SHSK (MST	,NDST)	1	1 1
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	IDND)	1	1
SKY LIGHT AREA SQFT (ASKY)	O.000000E+	-00	202008	
DAYTIME SKY LIGHT U BTU/SQFT-H	HHD-F (SKY	riin)	1.292998	
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	4.300000)E-01
PRACTION OF TROOPS MAIL TO IN		, ,		
			30	
INTERN	AL GAINS A	AND PROFILE		

INTERNAL	GAINS	AND	PROFILES		
				THERMOSTAT	SET
				POINT DEG F	ŗ

					FOIRE	10 1
	KW -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	24.	47268.	84150.	39270.		
HOUR	HO	URLY FRACT	TION OF PE			_
1	.200	.000	1.000	1.000	70.0	.0
2	.200	.000	1.000	1.000	70.0	.0
3	.200	.000	1.000	1.000	70.0	.0
4	.200	.000	1.000	1.000	70.0	.0
5	.400	.000	1.000	1.000	70.0	.0
6	.800	.000	1.000	1.000	70.0	.0
9	1.000	.000	.600	.600	70.0	.0
/		.000	.400	.400	70.0	.0
8	.200	.000	.100	.100	70.0	.0
9	.200		•	.100	70.0	.0
10	.200	.000	.100		70.0	.0
11	.200	.000	.100	.100		.0
12	.200	.000	.100	.100	70.0	.0

```
.200
                                                           70.0
                        .000
                                              .100
                                   .100
  13
                                                                         .0
                                                          70.0
                                              .100
             .200
                                   .100
                        .000
  14
                                              .100
                                                                         .0
                                   .100
                                                           70.0
             .200
                        .000
  15
                                                                         .0
                                   .300
                                              .300
                                                           70.0
                        .000
  16
             .200
                                                                         .0
                                                          70.0
                                              .800
             .400
                        .300
                                  .800
  17
                                              .800
                                                           70.0
                                                                         .0
                                  .800
             .800
                        .300
  18
                                                                         .0
                                  .500
                                              .500
                                                           70.0
                        .300
            1.000
  19
                                  .500
                                                                         .0
                                             .500
                                                           70.0
                        .300
            1.000
  20
                                                           70.0
                                                                         .0
                        .300
                                   .800
                                              .800
            1.000
  21
                                                                         .0
             .800
                                  1.000
                                             1.000
                                                           70.0
                         .000
  22
                                                                         .0
                                                           70.0
                                             1.000
              .200
                                  1.000
                         .000
  23
                                  1.000
                                                                         .0
                                                           70.0
                                            1.000
                         .000
  24
              .200
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 65.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 0.000000E+00
                             2
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 0.000000E+00
SYSTEM TYPE, (IECN)
ECONOMIZER HIGH TEMP LIMIT F 0.000000E+00
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 0.000000E+00
SYSTEM MIXED AIR TEMP(TMXAIR) 55.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                             0.00000E+00
FAN EFFICIENCY (EFAN) 1.000000E-05
FAN TOTAL PRESSURE IN. WATER (DP) 0.000000E+00
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1700000.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2125000.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                  .400
                                                     .369
                                                                            .451
                      .200
                                           .300
                                .286
            .191
                                                                  .800
                                                                             .812
                                 .625 .700
                                                      .718
                       .600
 .500
            .537
                                  1.00
                       1.00
 .900
            .906
CHILLER TYPE (ITYPCH)
                                  0
                                            1.000000E-10
COOLING PLANT RATED OUTPUT BTU (CFLOT)
COOLING PLANT RATED OUTPUT BTU (CFLOT) 1.000000E-10
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                  40.0
                                                                            34.5
                                 22.0 30.0
                                                       28.5
                       20.0
 10.0
            16.0
                                                                            71.5
                                                      60.0
                                                                  80.0
                                        70.0
                                  50.0
 50.0
            42.5
                       60.0
                      100.
                                 100.
       85.0
 90.0
```

BLDG 730 - BARRACKS WITHOUT A/C DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

JAN	LOAD 0. -352.	GAIN	SOLAR THRU WINDOW 13.	ROOF	PARTITN DOOR AND SLAB 01.	BSMT	WALL 0. -84.	WINDOW 0. -13.	VENT AND INFL 0. -305.	LATENT O. O.
FEB	0. -281.	GAIN LOSS			0. -1.					
MAR	0. -219.	GAIN LOSS	20.	0. -20.	0. -1.	0. 0.	4. -51.	0. -10.	0. -228.	0. 0.
APR	0. -81.	GAIN LOSS	20.	0. -13.	0. -1.	0. 0.	11. -27.	0. -6.	2. -128.	0. 0.
MAY	.00 -8.69	GAIN LOSS	22.17	.00 -7.97	.00 45	.00	15.34 -16.71	.05 -4.62	.86 -82.31	.00
JUN	.00	LOSS		-7.05	.00 42	.00	-14.56	-4.32		.00
	.00	Loss		-7.05	.01 43	•00				
AUG	.00	GAIN LOSS	19.94	.00 -7.32	.01 43	.00	13.90 -15.87	.08 -4.33	1.43 -74.79	.00
	-9.97	LOSS		-8.42	.01 41	.00	17.11			
OCT	0. -69.	GAIN LOSS	15.	0. -13.	0. -1.	o. o.	6. -29.	0. -6.	2. -110.	
NOV	0. -164.	GAIN LOSS	12.	0. -18.	0. -1.	0. 0.	2. -48.	0. -8.	0. -168.	0.
DEC	0. -339.	GAIN LOSS	12.	0. -28.	0. -1.	0.	0. -85.	0. -13.	0. -291.	0.
TOT	0. -1524.	GAIN LOSS	215.	0. -180.	0. -9.	o. o.	98. -466.	1. -89.	10. -1878.	0.
MAX MAX	HEATING COOLING	LOAD=	-117	4096.	BTUH ON I	DEC 18 DEC 31	HOUR 24	AMI	BIENT TE	MP 3. MP 42.

ZONE UA BTU/HR-F 5633.3

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730-1.I

BLDG 730 - BARRACKS WITHOUT A/C DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	RNAL S PERATU MAX	PACE JRE F MIN	DAY H		IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	71.	69.	4 29	21 8	57. 18.	7.64	5.11	.00	65.84
FEB	70.	71.	69.	9 2	22 9	64. 16.	6.90	4.62	.00	59.46
MAR	70.	77.	70.	28 3	21 9	63. 17.	7.64	5.11	.00	65.84
APR	73.	84.	70.	30 9	22 9	67. 34.	7.39	4.95	.00	63.71
MAY	78.	90.	70.	29 9	22 4	68. 44.	7.64	5.11	.00	65.84
JUN	85.	95.	77.	29 17	22 10	75. 72.	7.39	4.95	.00	63.71
JUL	89.	98.	77.	15 24	22 10	83. 70.	7.64	5.11	.00	65.84
AUG	88.	95.		29 26	21 8	76. 66.	7.64	5.11	.00	65.84
SEP	80.	94.	,	2	22 8	79. 49.	7.39	4.95	.00	63.71
OCT	73.	86.		4	22 9	69. 43.	7.64	5.11	.00	65.84
NOV	70.	. 78.		8	22 8	67. 22.	7.39	4.95	.00	63.71
DEC	70.	. 70.		23	21 9	52.	7.64	5.11	.00	65.84
YEAR			03.		•		89.95	60.18	.00	775.16

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730-1.I

BLDG 730 - BARRACKS WITHOUT A/C DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF HO	URS WHEN	MAXIMUM BTU	
MONTH	HEATING	ECONOMIZER	HEATING COC		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV	733 653 617 328 71 0 0 74 373 559	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	1063E+079637E+061005E+075527E+062870E+06 .0000 .00002466E+064365E+066909E+061174E+07	.0000 .0000 .0000 .0000 .0000 .0000 .0000 .0000
DEC YEAR	739 4 147	0	0	0	1174E+07	.0000

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730-1.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	554.38	.00	7.64	5.11	.00	65.84	24.2
FEB	458.88	.00	6.90	4.62	.00	59.46	24.2
MAR	387.87	.00	7.64	5.11	.00	65.84	24.2
APR	169.04	.00	7.39	4.95	.00	63.71	24.2
MAY	30.00	.00	7.64	5.11	.00	65.84	24.2
JUN	.00	.00	7.39	4.95	.00	63.71	24.2
JUL	.00	.00	7.64	5.11	.00	65.84	24.2
AUG	.00	.00	7.64	5.11	.00	65.84	24.2
SEP	30.86	.00	7.39	4.95	.00	63.71	24.2
OCT	171.04	.00	7.64	5.11	.00	65.84	24.2
NOV	319.64	.00	7.39	4.95	.00	63.71	24.2
DEC	540.93	.00	7.64	5.11	.00	65.84	24.2
YEAR	2662.64	.00	89.95	60.18	.00	775.16	24.2

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 73923. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 730-1.1

BLDG 730 - BARRACKS WITHOUT A/C DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	1063E+07
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	9637E+06
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.0000	1005E+07
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.0000	5527E+06
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.0000	2870E+06
JUN	2567.	1933.	1.000	72.	0.	٥.	0	0	.0000	.0000
JUL	2470.	1954.	1.000	77.	0.	٥.	0	0	.0000	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.0000	.0000
SEP	1800.	1330.	1.000	68.	ο.	0.	0	0	.0000	2466E+06
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.0000	4365E+06
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.0000	6909E+06
DEC	856.	586.	1.000	35.	0.	٥.	0	0	.0000	1174E+07

COMPUTER SIMULATIONS

BUILDING 826

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO.: BLDG. TYPE: 826 GYMNASIUM

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	3504.6	3172.0	3012.7		3352.1	3438.5
COOLING (kWH)						

SUPPLY AIR FAN	26500 CFM
FLOOR AREA	19827 FT ²
CFMI	2146 CFM
UA	8806 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	500	2000	75 HR	HR. ON HEATING	2210 HR/YR
SAT.	1200	1700	5 HR	HR. ON COOLING	1481 HR/YR
SUN.	1200	1700	5 HR	HR. OFF HEATING	2158 HR/YR
0011.	TOTAL OCCU		85 HR/WK	HR. OFF COOLING	1447 HR/YR
	TOTAL UNOC		83 HR/WK		
	ANNUAL OCC		4432 HR/YR		
	ANNUAL UNC		4328 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 2210 = 2158 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 1481 = 1447 HR/YR

				The state of the s
HOAUHO	3504.6 MBtu -	3352.1 MBtu	=	1.64E+01 Btu/CFM-HR
	2146 CFM *	4328 HR/YR		
HOAUH	3504.6 MBtu -	3352.1 MBtu	=	3.29E+01 Btu/CFM-HR
	2146 CFM *	2158 HR/YR		
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2146 CFM *	4328 HR/YR		
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2146 CFM *	1447 HR/YR		
HOAOHC	3504.6 MBtu -	3438.5 MBtu	=	6.95E+00 Btu/CFM-HR
	2146 CFM *	4432 HR/YR		
НОАОН	3504.6 MBtu -	3438.5 MBtu	=	1.39E+01 Btu/CFM-HR
	2146 CFM *	2210 HR/YR		
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	2146 CFM *	4432 HR/YR		
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	2146 CFM *	1481 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 04-Mar-93

DATE: BUILDING NO.:

826 GYMNASIUM

BLDG. TYPE: ENERGY CONSTANT CALCULATIONS

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	26500 CFM *	1481 HR/YR		
ECHO	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR
1	26500 CFM *	4432 HR/YR		
NSUCHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
Ţ	26500 CFM *	4328 HR/YR		
NSUCC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR
	26500 CFM *	1447 HR/YR		
DDCCHC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR
	26500 CFM *	4432 HR/YR	<u> </u>	
DDCCC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR
	26500 CFM *	1481 HR/YR		
NSC	3504.6 MBtu -	3172 MBtu	=	3.78E+04 Btu/UA
	8806			
DSC	3172 MBtu -	3012.69 MBtu	_ =	1.81E+04 Btu/UA
	8806			
OPT	(2 HR/DAY X 272 DAY	Y/YR) – 294	HR/YR	0-0 115075
			=	250 HR/YR
CHWR	(0.915 kW X 0.012 Eff.)	X 632 HRS X 2 Degrees	of Reset)	40.0 114/11/7011
				13.9 kWH/TON
OAR	506 HR/YR *	0.01	=	5.06 HR/YR

E M C ENGINEERS. INC. 22-Feb-93 DATE: BY: BHS PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: **CLIENT PROJ. ENG.: DOUG CAGE** FILE: 826BHL **LOCATION: FT LEONARD WOOD BUILDING HEATING LOAD CALCULATION SHEET BLDG NAME: GYMNASIUM** BLDG NO: BASKETBALL, RACQUET BALL, WEIGHT LIFTING **BLDG FUNCTION:** # FLOORS 19,827 FLOOR AREA: (SQ. FT) 588 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) SOUTH TOTAL EAST WEST NORTH 2,660 18,176 6,252 3,420 5,844 WALLS, GROSS (SQ. FT) 97 0 0 42 55 (SQ. FT) GLASS 294 0 PERSONNEL DOOR (SQ. FT) 84 168 42 120 789 324 0 INSULATED PANEL 345 (SQ. FT) 3,378 5,373 5,705 2,540 16,996 (SQ. FT) WALLS, NET ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 19,827 (SQ. FT) 294 789 PERSONNEL DOOR INSULATED PANEL (SQ. FT) 0 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 AIR SPACE 3. 6" CONCRETE BLK 4" FACE BRICK 1.89 4. 5. AIR SPACE 6" CMU 0.68 INSIDE AIR FILM 4.08 TOTAL R-WALL = 0.245 U=1/R**R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM 0.34 **BUILT UP ROOF** BUILT-UP ROOF 2" RIGID INSULATION 6.68 Z"RIGID INSULATION 11 2" POURED GYPSUM 2" POURED GYPSUM 1.80 1.19 FORM BOARD FORM BOARD 1.79 **ACOUSTIC TILE** AIR SPACE 0.68 ACOUSTIC TILE INSIDE AIR FILM TOTAL R-ROOF = 12.64 0.079 U=1/R R-GLASS 1.61 PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. **GLASS TYPE:** 0.83 SLF SLAB TYPE FLOOR: CONCRETE 0.00 R-BASEM NONE **BASEMENT TYPE:** R-PANEL 4.20 INSULATED PANEL: 2.56 R-PDOOR PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0 X CFM / SQ.FT. 0.000 =: TIGHT WALL H/M/L (SQ.FT.) 2,090 18176 X CFM / SQ.FT. 0.115 = AVG. WALL H/M/L (SQ.FT.) 0 0.000 LEAKY WALL H/M/L (SQ.FT.) X CFM / SQ.FT. O 1.600 X CFM /OPENING /HR DOOR OPENINGS / HR - SINGLE DOOR 55 X CFM /OPENING /HR 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 2146 TOTAL INFILTRATION (CFM) = 188 0.238 X PANEL 'U' **UA PANEL** = PANEL AREA 789 = 0.391 115 X DOOR 'U' **UA PDOOR** = PDOOR AREA 294 X WALL 'U' 4.166 0.245 16,996 **UA WALL** = WALL AREA X ROOF 'U' 1,568 0.079 **UA ROOF** = ROOF AREA 19,827 60 X GLASS "U" 0.621 97 **UA GLASS** = GLASS AREA 488 0.830 **UA SLAB** = SLAB PERIM. 588 X SLF X BASE. 'U' 0 0.000 UA BASEM. =B-WALL AREA 0 X A. T. F. 1.035 = 2,221 2146 **INFILTRATION** CFM 8.806 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 06-Feb-93 EMC NO:

ZONE

BHS CEL 826Z1 826 Date: Prepared by: Checked by: File: Bldg:

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditioned	dSpaces			
Zone	No. of	Activit		Typical	Sensible	Latent	TOT Sen. TOT. L	TOT. Lat
Š	People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
	5	4	Seated. light work, typing	Offices, hotels, apts	250	200	1	1,000
	9	=	Heavy work, athletics	Gymnasium	710	1,090	42,600	65,400
TOTAL	65					TOTAL	43,850	43,850 66,400

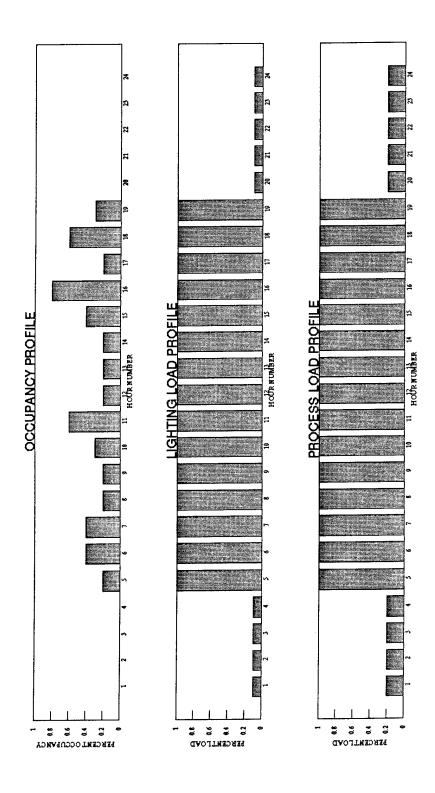
			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			
Š	Fixtures	Туре	Description	Watts/Fixture	Total Wattage
-	40		35 Merc. Vap Medium Base, 75w with 18w ballast	93	3,720
	9	48	18 Incandescent – 60w	9	009
	34		16 Fluorescent, 2 - 15w lamps, 5w ballast	35	1,190
	10	9	10 Fluorescent, 2 - 34w lamps, 4w ballast (2x4 ft. fixture)	72	720
	35		47 HPS - Medium Base, 35w with 11w ballast	46	1,610
	9	88	38 Merc. Vap Mogul Base, 175w with 25w ballast	200	009
TOTAL	132			TOTAL	8,440

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		l
Š.	Equipmen	Туре	Description	Average Wattage	to Space (%)	Total Wat	(B
		3	Microcomputer	350	816	320	1,195
	-	24	24 Coffee Maker	1,500	30%	1,500	5,120
*****		49	Radio	71	401	71	242
	2	2	Water Cooler	700	20%	1,400	4,778
			Harrier Company of the Company of th				
-							
				TOTAL	44%	3,321	11,335

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000	06-Feb~93	BHS	ŒF	826Z1	826	-
EMC NO.:	DATE:	PREPARED BY:	CHECKED BY:	FILE:	BLDG:	ZONE:

					***************************************	1									ĺ				ĺ					
BLDG	BLDG	TYPE OF										2	URI	HOUR NUMBER	ER									
TYPE	FUNCTION	PROFILE	-	2	3	4	2	9	7	8	9	5	_	12 13 14 15 16 17 18 19 20 21 22 23 24	14	15	16	17	18	19	20	21	2	23
9	Gym	OCCUPANCY					02 (0.4	4.(0.4 0.4 0.2 0.2	2 0.	3	9	0.3 0.6 02 02 02	02	0.4 0.8 0.2	0.8	02	90	0.3	╟			
		LIGHTING	0.1	0.1	0.1	0.1	-	-	-	-	-	-	-	-		-	-		1_		0.1	1.0	0.1	1.0
		PROCESS	02 02 02	02	02	02	-	-	-	-	-	-	-	-		-	-	-	-	-	02 02	12 02	2 02	
												ļ										֡		֡



BLDG 826 - GYMNASIUM BASERUN (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS ------
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
                                                          1.000000
WEEKEND INTERNAL GAINS FACTOR (WKEND)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
STATION 13995
                    YEAR 1955
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
                                                                 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
                                                                70.000000
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
INITIAL TEMPERATURE OF BUILDING MASS (TO)
                                                              70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC REPER (WOLUME)
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 553768.100000
FLOOR AREA (SQFT) 19827.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1919350.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 1919350.000000
                                                     2146.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
INFILTRATION PROFILE
                                                                 1.00
                                                                               1.00
                                                                                           1.00
                                        1.00 1.00
                           1.00
             1.00
 1.00
                                                                 1.00
                                                                                           1.00
                                                                               1.00
                                        1.00 1.00
 1.00 1.00 1.00
                                                                                           1.00
                                                                               1.00
                                                                 1.00
            1.00 1.00
                                      1.00
                                                   1.00
 1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 2.330000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP) 48600.0000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.00000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 488.000000
                                                      48600.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 115.000000
WINDOW GLASS NIMBER (NG) 30
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

	WALL DAT	ra		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	6029.0	2660.0	5718.0	3378.0
WINDOW AREA SQFT (AWND)	55.0	.0	42.0	.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	5.5	.0	4.2	.0
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .245	120.0 .245	120.0 .2 4 5
WALL TRANSFER FUNCTIONS				
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN)	.01837	.01837	.01837	.01837
NUMBER OF BN FACTORS (NB	5	5	5	5
BN FACTORS BN (BN)				
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00283	.00283	.00283
N=3	.01017	.01017	.01017	.01017
N=4	.00498	.00498	.00498	.00498
N≖5	.00037	.00037	.00037	.00037
N=6	*****	*****	******	*****
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5
DN FACTORS				
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	*****
POOR AREA SOFT (AROF) 19827	. 000000			
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y) ROOF C TRANSFER FUNCTION (CNR)	F) 7.90	0000E-02	_	
ROOF TRANS FUNCTIONS USED (1=Y)	ES, O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	5.0351	65E-03		
ROOF B TRANSFER FUNCTIONS (BNR)			
.868E-04 .217E-02 .252E-02	.260E-03	867.	867.	
ROOF D TRANSFER FUNCTIONS (DNR)			
1.00 -1.16 .223	220E-02	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00	000	
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0.0	000000E+00			
SKYLIGHT WIDTH FT (SKW) 0.00)0000E+00	00000=+00		
SKYLIGHT OVERHANG WIDTH FT (SKO	JW) 0.00	00000E+00	00#+00	
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	OOETOO	
SKYLIGHT GLASS NUMBER (NS)	T	000000	^	
SKYLIGHT SHADING COEFFICIENT (SHSK) U	* 0000000E+0	1	1
SUMMER START MONTH AND DAY FOR	TOM ACHO	, NDSI)	1	1
SUMMER END MONTH AND DAY FOR SE	NOCOCOTI	ן עאַט י	4	*
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (S SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR SI SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-HI NIGHT TIME SKYLIGHT U BTU/SQFT- FRACTION OF PROCESS HEAT TO INTO).UUUUUUE+	1	202008	
DAYTIME SKY LIGHT U BTU/SQFT-HI	TT (SKIU)	±•. 'TMT\	1 20200 1 20200	
NIGHT TIME SKYLIGHT U BTU/SQFT	ינאמן ז־את־י אמס זגאמשי	ON)	4 400000	E-01
FRACTION OF PROCESS HEAT TO IN	LEVNUT STA	CE (FAF)	4.400000	

					POINT D	EG F
	KW -		- BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	8.	4987.	43850.	66400.		
HOUR	H	OURLY FRAC	TION OF PE	AK		
1	.100	.200	.000	.000	60.0	.0
2	.100	.200	.000	.000	60.0	.0
3	.100	.200	.000	.000	60.0	.0
4	.100	.200	.000	.000	60.0	.0
5	1.000	1.000	.200	.200	60.0	.0
6	1.000	1.000	.400	.400	60.0	.0
7	1.000	1.000	.400	.400	60.0	.0
8	1.000	1.000	.200	.200	60.0	.0
9	1.000	1.000	.200	.200	60.0	.0
10	1.000	1.000	.300	.300	60.0	.0
11	1.000	1.000	.600	.600	60.0	.0
12	1.000	1.000	.200	.200	60.0	.0

```
60.0
                                                                             .0
                                                 .200
             1.000
                         1.000
                                      .200
  13
                                                              60.0
                                     .200
                                                 .200
             1.000
                         1.000
  14
                                                 .400
                                     .400
                                                              60.0
                                                                              .0
                         1.000
  15
             1.000
                                     .800
                                                 .800
                                                              60.0
                                                                              ٠0
                         1.000
             1.000
  16
                                                                              .0
                                                 .200
                                                              60.0
             1.000
                         1.000
                                      .200
  17
                                                 .600
                                                                              .0
                                                              60.0
                                     .600
  18
             1.000
                         1.000
                                                 .300
                                      .300
                                                              60.0
                                                                             .0
             1.000
                         1.000
  19
                                                 .000
                                                                             .0
                                                              60.0
              .100
                          .200
                                      .000
  20
               .100
                                                              60.0
                                                                             .0
                                      .000
                                                 .000
                          .200
  21
                                                                             .0
                                                 .000
                                                              60.0
               .100
                          .200
                                      .000
  22
                                                                             .0
                                                              60.0
               .100
                                      .000
                                                 .000
  23
                          .200
                                                                             .0
                                     .000
                                                              60.0
                                                 .000
  24
               .100
                          .200
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
                                                      60.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                     100.000000
SYSTEM TYPE, (IECN)
                            26500.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F
                                      100.000000
SYSTEM SUPPLY AIR START TIME HR
                                       0.00000E+00
SYSTEM SUPPLY AIR STOP TIME HR
                                          24.000000
                                        70.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                                 6.000000E-01
                          5.500000E-01
FAN EFFICIENCY (EFAN)
FAN TOTAL PRESSURE IN. WATER (DP) 3.750000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1919350.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2399188.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                      .400
                                                                                 .451
                                               .300
                                                          .369
                                   .286
            .191
                        .200
                                                                      .800
                                                                                 .812
                                               .700
                                                          .718
                        .600
                                   .625
 .500
             .537
 .900
            .906
                        1.00
                                   1.00
CHILLER TYPE (ITYPCH)
                                    4
                                               1.000000E-10
COOLING PLANT RATED OUTPUT BTU (CFLOT)
COOLING PLANT RATED INPUT BTU (CFLIN)
                                              0.00000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                     .000
                                                          .000
                                                                                 .000
                        .000
                                   .000
                                               .000
             .000
 .000
                                                                      .000
                                                                                 .000
                                               .000
                                                          .000
                        .000
                                   .000
 .000
             .000
                        .000
             .000
                                   .000
 .000
```

BLDG 826 - GYMNASIUM BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT DOOR				VENT	
NO.			THRU WINDOW		AND	RSMT	WAT.T.	WINDOW	AND I INFL	LATENT
	H LOAD O.	GATN	WINDOW 2.	ROOF 0.			1.	0.	0.	0.
UAN	-506.			-34.	-11.	0.	-60.	-1.	-433.	0.
										•
FEB	0.		2.	0.	0.	0.	3.	0.	1. -360.	0. 0.
	-407.	LOSS		-27.	-9.	0.	-42.	-1.	-360.	0.
MAD	0.	CATN	2	0.	0.	0.	10.	0.	2.	0.
MAR		LOSS	2.	-22.	-8.	o.	-30.	-1.	2. -319.	0.
	550.									
APR	0.	GAIN	2.	0.	0.	0.	21.	0.	7. -149.	0.
	-118.	LOSS		-11.	-4.	0.	-11.	0.	-149.	0.
	00	CATN	2 26	1 01	.29	.00	30.14	.02	9.57	.00
	-23.07		2.30	-4.21	-2.37		-2.74	19	-84.41	.00
JUN	.00	GAIN	2.41	1.45	.28	.00	32.03	.02	9.49	.00
	37	LOSS		-2.68	-1.94	.00	-1.14	16	-66.10	.00
	.00	CATN	2 43	1 64	.31	. 00	31.91	.03	11.08	.00
JUL	05		2.43	-2.79	-1.96	.00	-1.20	16	-69.48	.00
	• • • •									
AUG	.00	GAIN	2.11	1.23	.34	.00	28.87	.03	10.85 -65.63	.00 .00
	01	LOSS		-2.86	-1.85	.00	-1.26	15	-65.63	.00
CED	.00	CATN	1 90	25	. 32	.00	22.41	.03	10.91	.00
SEP	-22.84	LOSS		-5.43	-2.27	.00	-3.15	19	-74.87	.00
				_						
OCT	0.	GAIN	2.	0.	0.	0.	14.	0.	7.	0.
	-102.	LOSS		-12.	-4.	0.	-11.	0.	-127.	0.
27017	0.	CATN	1	0	٥.	٥.	6.	0.	3.	0.
NOV	-241.		1.	-20.	-6.	o.	-27.	-1.	3. -227.	0.
	241.	1000								_
DEC	0.		1.	0.	0.	0.	1.	0.	0. -443.	0.
	-517.	LOSS		-34.	-11.	0.	-60.	-1.	-443.	0.
mom	0.	CATN	22	6	2	٥.	202.	0.	73.	0.
	-2274.		23.	-176.	-65.	o.	-251.	-5.	73. -2418.	0.
	22/30									
			_					33/7	T TO A TOTAL OF THE SECOND	D 2
MAX	HEATING	LOAD=	-1919	9350.	BTUH ON	DEC 18	HOUR 9	AME	BIENT TEM	P 42.
MAX	COOLING	LOAD=		υ.	DIUM UN	DEC 21	HOUR 24	FILL	, 14	

ZONE UA BTU/HR-F 6098.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826.I

BLDG 826 - GYMNASIUM BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE:	RNAL : PERAT		DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	60.	66.	59.	4 29	16		4.16	5.90	5.39	29.25
FEB	60.	69.	59.	13 2	16		3.76	5.33	4.78	26.33
MAR	61.	80.	59.	28 12	16		4.16	5.90	4.86	28.73
APR	65.	88.	58.	30 1	16		4.03	5.71	4.53	27.63
MAY	70.	94.	59.	26 9	19 20		4.16	5.90	4.05	27.92
JUN	76.	96.	60.	30 19	19		4.03	5.71	3.65	26.74
JUL	81.	105.	60.	28 10	18 4		4.16	5.90	3.82	27.69
AUG	79.	100.	60.	29 25	16		4.16	5.90	4.02	27.88
SEP	73.	99.	59.	2 24	18 20		4.03	5.71	3.71	26.80
OCT	65.	88.	59.	1 3	15		4.16	5.90	4.52	28.39
NOV	62.	78.	59.	8 13	16 18		4.03	5.71	4.80	27.89
DEC	60.	68.	53.	23 18	17		4.16	5.90	5.20	29.06
YEAR							48.98	69.51	53.33	334.31

BLDG 826 - GYMNASIUM BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	LOADS WER	HOURS WHEN E NOT MET OOLING	MAXIMUM BTU HEATING	
JAN	715	0	0	0	1897E+07	.0000
FEB	634	0	0	0	1654E+07	.0000
MAR	614	0	0	0	1423E+07	.0000
APR	376	0	0	0	9515E+06	.0000
MAY	135	0	0	0	6113E+06	.0000
JUN	7	ō	0	0	1041E+06	.0000
JUL	,	Õ	0	0	3933E+05	.0000
AUG	3	Õ	Ō	0	-7478.	.0000
	139	Ö	Ō	0	4159E+06	.0000
SEP	389	Ô	ñ	Ö	7568E+06	.0000
OCT	526	0	ő	Ö	1272E+07	.0000
NOV		Ö	12	ŏ	1919E+07	.0000
DEC	715	0	12	ő	1919E+07	.0000
YEAR	4255	U	12	U	. 17170107	

SYSTEM TOTALS

	HEATING	ENERG COOLING	Y CONSUMPT	ION PROCESS	TO FANS	OTAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC
MONTH	MILLION	THOUSAND KWH	THOUSAND KWH	MILLION BTU	THOUSAND KWH	MILLION BTU	DEMAND KW
JAN	736.88	.00	4.16	5.90	1.58	29.25	10.6
FEB	611.25	.00	3.76	5.33	1.40	26.33	10.6
MAR	531.35	.00	4.16	5.90	1.43	28.73	10.6
APR	238.32	.00	4.03	5.71	1.33	27.63	10.6
MAY	69.72	.00	4.16	5.90	1.19	27.92	10.6
JUN	3.20	.00	4.03	5.71	1.07	26.74	10.6
JUL	.91	.00	4.16	5.90	1.12	27.69	10.6
AUG	1.37	.00	4.16	5.90	1.18	27.88	10.6
SEP	68.37	.00	4.03	5.71	1.09	26.80	10.6
OCT	225.72	.00	4.16	5.90	1.33	28.39	10.6
NOV	408.75	.00	4.03	5.71	1.41	27.89	10.6
DEC	752.35	.00	4.16	5.90	1.52	29.06	10.6
YEAR	3648.20	.00	48.98	69.51	15.62	334.31	10.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 198628. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826.I

BLDG 826 - GYMNASIUM BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

MONTH	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYS TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	1897E+07
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.0000	1654E+07
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.0000	1423E+07
APR	2312.	1600.	1.000	55.	0.	0.	0	0	.0000	9515E+06
MAY	2566.	1826.	1.000	65.	0.	0.	0	0	.0000	6113E+06
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.0000	1041E+06
JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.0000	3933E+05
AUG	2280.	1840.	1.000	76.	0.	0.	0	0	.0000	-7478.
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.0000	4159E+06
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.0000	7568E+06
NOV	1039.	732.	1.000	47.	0.	0.	0	0	.0000	1272E+07
DEC	883.	604.	1.000	35.	0.	0.	0	12	.0000	1919E+07

BLDG 826 - GYMNASIUM NIGHT SETBACK (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS ------
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
                                                    1.000000
WEEKEND INTERNAL GAINS FACTOR (WKEND)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
                                  1.000000
SKY CLEARNESS FACTOR (CLN)
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                  YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1)
                                 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
                                                           20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                         70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
                                                       70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 553768.100000
FLOOR AREA (SQFT) 19827.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1919350.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 1919350.000000
                                                2146.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
INFILTRATION PROFILE
                                          1.00
                                                          1.00
                                                                       1.00
                                                                              1.00
                        1.00
                                    1.00
 1.00
            1.00
                                    1.00 1.00
           1.00 1.00
                                                          1.00
                                                                       1.00
                                                                                 1.00
 1.00
                                                          1.00
                                                                       1.00
                                                                             1.00
                                    1.00 1.00
 1.00
            1.00
                       1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
                                                   2.330000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
C FACTOR IN INFILTRATION EQUATION (CINC)
                                                 48600.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
                                                488.000000
SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 115.000000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
                                       30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

	WALL DAT	ra An		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SQFT (AWLL)	6029.0	2660.0	5718.0	3378.0
WINDOW AREA SOFT (AWND)	55.0	.0	42.0	.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	5.5	.0	4.2	.0
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE (SOLM) U VALUE BTU/(HR-SQFT-F) (UW)	.245	.245	.245	. 243	
WALL TRANSFER FUNCTIONS	.01837	.01837	.01837	.01837	
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5	
BN FACTORS BN (BN) N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00283	.00283	.00283	
N=3	.01017	.01017	.01017	.01017	
N=4	.00498	.00498	00498	00037	
N=5	.00037	******	******	*****	
N=6 NUMBED OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS	•	_			
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000	
N=2	-1.50943	-1.50943	-1.50943	-1.50943	
N=3	.65654	.65654	.65654	.65654	
N=4	07415	0/415	00212	00212	
N=5	.00212	******	******	*****	
N=6 ROOF AREA SQFT (AROF) 1982	27.000000				
ROOF U VALUE BTU/HR-SQFT-F (JRF) 7.90	0000E-02			
ROOF U VALUE BTU/HR-SQFT-F (1) ROOF TRANS FUNCTIONS USED (1) ROOF C TRANSFER FUNCTION (CN)	=YES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CN)	R) 5.0351	65E-03			
.868E-04 .217E-02 .252E-03	2 .260E-03	867.	867.		
ROOF D TRANSFER FUNCTIONS (DI 1.00 -1.16 .223	NK) - 220F-02	999	999.		
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00	3330		
SKYLIGHT AZIMUTH ANGLE DEGRE	ES (AZSK)	9999.000	000		
CENTICUM DETCHA EA (CKH)	0.000000)			
SKYLIGHT WIDTH FT (SKW) 0	.000000E+00				
SKYLIGHT OVERHANG WIDTH FT (SKOW) U.U	J00000E+00	00E+00		
OVERHANG HEIGHT ABOVE SKYLIG SKYLIGHT GLASS NUMBER (NS)	HT FT (SKOH)	0.0000	700E+00		
SKYLIGHT SHADING COEFFICIENT	(SHSK) (0.00000E+0	00		
SUMMER START MONTH AND DAY FO	OR SHSK (MS)	(,NDST)	1	1	
SUMMER START MONTH AND DAY FOR	SHSK (MND, N	NDND)	1	1	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT NIGHT TIME SKYLIGHT U BTU/SQ FRACTION OF PROCESS HEAT TO	0.00000E	+00			
DAYTIME SKY LIGHT U BTU/SQFT	-HR-F (SKYU)	1.	292998		
NIGHT TIME SKYLIGHT U BTU/SQ	FT-HR-F (SK)	(UN)	4 40000) F:O1	
THE TENTO THE REPORT OF THE PROPERTY OF	יו די ווים אם				
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0					
60.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0

INTERNAL	GAINS	AND	PROFILES		
				THERMOSTAT	SET
				POINT DEG F	7

PEAK VAL	KW - LIGHTS 8.	PROCESS S	43850.	PEOPLE LATENT 66400.	HEATING	COOLING
HOUR	HO	DURLY FRACT	LION OF PE	MK		_
1	.100	.200	.000	.000	55.0	.0
2	.100	.200	.000	.000	55.0	.0
3	.100	.200	.000	.000	55.0	.0
				.000	55.0	.0
4	.100	.200	.000	.000		
5	1.000	1.000	.200	.200	60.0	.0

```
.400
                                                           60.0
                                                                         .0
                                              .400
                       1.000
            1.000
                                                                         .0
                       1.000
                                              .400
                                                           60.0
                                   .400
            1.000
  7
                                              .200
                                   .200
                                                           60.0
                                                                         .0
                       1.000
  8
            1.000
                                              .200
                                  .200
                                                           60.0
                                                                         .0
            1.000
                       1.000
   9
                                                                         ٠0
                                              .300
                                                           60.0
                      1.000
                                   .300
  10
            1.000
                                                                         .0
                                  .600
                                              .600
                                                          60.0
            1.000
                       1.000
  11
                                             .200
                                                          60.0
                                                                         .0
            1.000
                       1.000
                                   .200
  12
                                              .200
                                                          60.0
            1.000
                                   .200
                       1.000
  13
                                             .200
                                   .200
                                                                         .0
                                                          60.0
                       1.000
            1.000
  14
                                                                         .0
                                  .400
                                             .400
                                                          60.0
                       1.000
  15
            1.000
                                  .800
                                                          60.0
                                                                         .0
                                             .800
                      1.000
            1.000
  16
                                             .200
                                                          60.0
                                                                         .0
                                  .200
                      1.000
            1.000
  17
                                             .600
                                  .600
                                                          60.0
                                                                         .0
            1.000
                       1.000
  18
                                 .300
                                             .300
                                                                         .0
                      1.000
                                                          60.0
  19
            1.000
                                   .000
                                                                         .0
                        .200
                                              .000
                                                           60.0
             .100
  20
                                                                         .0
                                   .000
                                                          55.0
              .100
                        .200
                                              .000
  21
                                                           55.0
                                                                         .0
                                              .000
              .100
                         .200
                                   .000
  22
                                              .000
                                   .000
                                                           55.0
                                                                         .0
              .100
                         .200
  23
                                   .000
                                                                         .0
                                              .000
                                                           55.0
              .100
                        .200
  24
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 60.000000 NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 100.000000
                             2
SYSTEM TYPE, (IECN)
                        26500.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 100.000000
                                   0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
                                     24.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                      70.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 6.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 3.750000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1919350.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2399188.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                  .400
                                                       .369
                                                                             .451
                      .200
                                .286
                                            .300
            .191
                                                       .718
                                                                  .800
                                                                             .812
                       .600
                                 .625
                                            .700
 .500
            .537
                                 1.00
            .906
 .900
CHILLER TYPE (ITYPCH)
                                   4
                                            1.000000E-10
COOLING PLANT RATED OUTPUT BTU (CFLOT)
COOLING PLANT RATED INPUT BTU (CFLIN)
                                           0.000000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                       .000
                                                                  .000
                                                                             .000
                                            .000
 .000
            .000
                       .000
                                 .000
                                  .000
                                            .000
                                                                             .000
                                                       .000
                                                                  .000
 .000
            .000
                       .000
            .000
                       .000
                                  .000
 .000
```

BLDG 826 - GYMNASIUM NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTITM DOOR AND		WATT	MUNDOM	VENT AND INFL	LATENT
MNTH	LOAD 0.	GATN	WINDOW 2	ROOF O.	0.	0.	1.	0.	0.	0.
UAN	-459.		2.	-31.	-10.	ō.	-53.	-1.	-397.	0.
										0
FEB	0.	GAIN	2.	0.	0.	0.	4. _26	-1	1. -329.	0. 0.
	-366.	LOSS								
мар	0.	GATN	2.	0.	0.	0.	11.	0.	3. -289.	0.
THIC	-298.	LOSS		-20.	-7.	0.	-25.	-1.	-289.	0.
APR	0.	GAIN	2.	0.	0.	0.	22.	0.	7. -134.	0.
	-97.	LOSS		-9.	-4.	0.	-8.	0.	-134.	U.
1/2 1/	00	CATN	2 26	1 08	.30	00	30.69	- 02	9.52	.00
	-15.91		2.30	-3.83	-2.21	.00	-2.04	18	-79.08	.00
	13.71	повь								
JUN	.00	GAIN	2.41	1.46	.28	.00	32.06	.02	9.52	.00
	12	LOSS		-2.66	-1.94	.00	-1.11	16	-65.97	.00
	00	CATN	2 42	1 61	.31	00	31 92	03	11.08	.00
JOL	.00 05		2.43	-2.79	-1.95	.00	-1.20	16	11.08 -69.48	.00
	05	ПОВВ								
AUG	.00	GAIN	2.11	1.23	.34	.00	28.88	.03	10.87 -65.62	.00
	.00			-2.86	-1.85	.00	-1.26	15	-65.62	.00
CED	.00	GAIN	1 00	30	33	. 00	23.13	.03	10.97	.00
		LOSS	1.50	-4.86	-2.04	.00	-2.15	17	-68.39	.00
OCT	0.	GAIN	2.	0.	0.	0.	15.	0.	7.	0.
	-80.	LOSS		-10.	-3.	0.	-8.	0.	-110.	0.
NOU	0.	CATN	1	0	0	0	7.	0.	4.	0.
	-209 .		1.	-18.	0. -5.	0.	-23 .	o.	-203.	o.
	200.									
DEC	0.	GAIN	1.	0.	0.	0.	2.	0.	1. -410.	0.
	-473.	LOSS		-31.	-10.	0.	-53.	-1.	-410.	0.
mom.	^	CATN	23	6	2	0	208-	0.	74.	0.
101	-2012.		23.	-161.	-59 .	ŏ.	-215.	-5.	-2220.	0.
	2012.									
								4		D 2
MAX	HEATING	LOAD=	-191	9350. I	BTUH ON I	DEC 18	HOUR 9	AME	SIENT TEM SIENT TEM	P 3. P 42.
MAX	COOLING	LOAD=		0. 1	PIUN UN I	DEC 31	HOUR 24	APIE	, a com a la com	. 44.

ZONE UA BTU/HR-F 6098.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-2.I BLDG 826 - GYMNASIUM NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATI	URE F	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	58.	66.	54.	4 29	16 4	63.	4.16	5.90	5.36	29.22
FEB	58.	69.	53.	13 16	16 21		3.76	5.33	4.65	26.21
MAR	59.	81.	53.	28 9	16 21		4.16	5.90	4.68	28.54
APR	64.	88.	53.	30 3			4.03	5.71	4.36	27.45
MAY	69.	94.	55.	26 11			4.16	5.90	4.05	27.91
JUN	76.	96.	56.	30 18		9 82. 3 56.	4.03	5.71	3.65	26.74
JUL	81.	105.	58.	28 10		90. 4 57.	4.16	5.90	3.82	27.69
AUG	79.	100.	59.	29 25		6 95. 6 51.	4.16	5.90	4.00	27.86
SEP	72.	99.	53.	2 17		8 86. 1 50.	4.03	5.71	3.63	26.73
OCT	63.	88.	54.	1 15	_		4.16	5.90	4.39	28.26
NOV	60.	78.	53.	8 15			4.03	5.71	4.63	27.72
DEC	58.	69.	53.	23 18		7 62. 4 1.	4.16	5.90	5.00	28.87
YEAR				·			48.98	69.51	52.21	333.20

BLDG 826 - GYMNASIUM NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	LOADS WERE	OURS WHEN	BT	J
MONTH	HEATING	ECONOMIZER	HEATING CO	OOLING	HEATING	COOLING
JAN	694	0	0	0	1825E+07	.0000
FEB	611	0	0	0	1646E+07	.0000
MAR	577	0	0	0	1453E+07	.0000
APR	323	0	0	0	9694E+06	.0000
MAY	108	Ō	0	0	6365E+06	.0000
JUN	2	0	0	0	1031E+06	.0000
JUL	1	Ō	0	0	4597E+05	.0000
AUG	ō	Ô	0	0	.0000	.0000
SEP	103	Ó	0	0	4935E+06	.0000
OCT	348	Ö	0	0	7563E+06	.0000
NOV	473	0	0	0	1226E+07	.0000
DEC	688	Ō	8	0	1919E+07	.0000
YEAR	3928	0	8	0	1919E+07	.0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	679.58	.00	4.16	5.90	1.57	29.22	10.6
FEB	562.74	.00	3.76	5.33	1.36	26.21	10.6
MAR	479.84	.00	4.16	5.90	1.37	28.54	10.6
APR	199.32	.00	4.03	5.71	1.28	27.45	10.6
MAY	54.20	.00	4.16	5.90	1.19	27.91	10.6
JUN	.91	.00	4.03	5.71	1.07	26.74	10.6
JUL	.46	.00	4.16	5.90	1.12	27.69	10.6
AUG	.00	.00	4.16	5.90	1.17	27.86	10.6
SEP	49.41	.00	4.03	5.71	1.06	26.73	10.6
OCT	192.78	.00	4.16	5.90	1.29	28.26	10.6
NOV	358.64	.00	4.03	5.71	1.36	27.72	10.6
DEC	699.09	.00	4.16	5.90	1.47	28.87	10.6
YEAR	3276.98	.00	48.98	69.51	15.30	333.20	10.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 179849. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-2.I

BLDG 826 - GYMNASIUM NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

					OIL	EK HORT					
M		CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. DEG +	DRIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
·	JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	1825E+07
1	FEB	1464.	929.	1.000	37.	0.	0.	0	0	.0000	1646E+07
1	MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.0000	1453E+07
1	APR	2312.	1600.	1.000	55.	0.	0.	0	0	.0000	9694E+06
1	YAM	2566.	1826.	1.000	65.	0.	ο.	0	0	.0000	6365E+06
,	JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.0000	1031E+06
,	JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.0000	4597E+05
	AUG	2280.	1840.	1.000	76.	0.	Ο.	0	0	.0000	.0000
	SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.0000	4935E+06
(OCT	1437.	953.	1.000	57.	0.	0.	0	0	.0000	7563E+06
1	NOV	1039.	732.	1.000	47.	0.	0.	0	0	.0000	1226E+07
1	DEC	883.	604.	1.000	35.	0.	0.	0	8	.0000	1919E+07

BLDG 826 - GYMNASIUM DDC (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

LAST CASE FLAG (1=YES, 0=NO) (LSTCS)

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                         YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGKN)

SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

70.000000

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 553768.100000
 FLOOR AREA (SQFT) 19827.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1919350.000000
 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 1919350.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 2146.000000
 INFILTRATION PROFILE
                1.00 1.00 1.00 1.00 1.00 1.00
                                                                                                                    1.00
  1.00
  1.00 1.00 1.00 1.00 1.00 1.00
                                                                                                                    1.00
  1.00 1.00 1.00 1.00
                                                                                   1.00
                                                                                                     1.00
                                                                                                                    1.00
                                                                  1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 2.330000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
 C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-0
BUILDING THERMAL MASS MCP BTU/F (CMCP) 48600.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 488.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
 DOOR UA BTU/HR-F (DUA) 115.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
 WALL DATA

WALL NUMBER

1 2 3 4

AZIMUTH ANGLE (AZ) .00 90.00 180.00 -90.00

WALL AREA SQFT (AWLL) 6029.0 2660.0 5718.0 3378.0

WINDOW AREA SQFT (AWND) 55.0 .0 42.0 .0

WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0

WINDOW WIDTH FT (WNDW) 5.5 .0 4.2 .0

WIDTH OF OVERHANG (WOH) .0 .0 .0 .0

OVERHANG HGT ABV WNDW(HOH) .0 .0 .0 .0
                                                       WALL DATA
```

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .245	120.0 .245	120.0 .245	
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3	.01837	.01837	.01837		
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6					
N=1	.00003	.00003	.00003	.00003	
N=2	.00283	.00283	.00283	.00283	
N=3	.01017	.01017	.01017	.01017	
N=4	.00498	.00498	.00498	00430	
N=5	.00037	.00037	.00037	******	
N=6	****	******	5	5	
NUMBER OF DN FACTORS (ND)	3	-	-		
DN FACTORS	1 00000	1 00000	1.00000	1.00000	
N=1	-1 50943	-1.50943	-1.50943	-1.50943	
N=2 N=3	65654	.65654	.65654	.65654	
N=3 N=4	07415	07415	07415	07415	
N=5	.00212	.00212	.00212	.00212	
N-6	*****	*****	*****	*****	
POOR AREA SORT (AROF) 19827	, 000000				
ROOF U VALUE BTU/HR-SQFT-F (UF ROOF TRANS FUNCTIONS USED (1=Y	(F) 7.90	0000E-02			
POOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR)	5.0351	.65E-03			
ROOF B TRANSFER FUNCTIONS (BNF	()				
.868E-04 .217E-02 .252E-02	.260E-03	867.	867.		
POOR D TRANSFER FUNCTIONS (DNF	3)				
1.00 -1.16 .223 SKYLIGHT TILT DEGREES (TILT)	220E-02	999.	999.		
SKYLIGHT TILT DEGREES (TILT)	0.000000)E+00			
SKYLIGHT AZIMUTH ANGLE DEGREES	S (AZSK)	9999.000	1000		
SKYLIGHT HEIGHT FT (SKH) 0.	000000E+00)			
SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	NOODOR OO			
SKYLIGHT OVERHANG WIDTH FT (SF	OW) U.C	0 0000	00E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKUH)	0.0000	00+300		
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (GROK/ (\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	in		
SKYLIGHT SHADING COEFFICIENT (Susy) (Med	י אסטטטטפיט פייט	1	1	
SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHCK (WND)	ו מאחנ.	1	1	
SUMMER FUL MONIT AND DAI FOR E	TOUDDOOL ACTO	-00	-	_	
SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	ID-F (SKYII)	1.	292998		
NICHT TIME SKYLIGHT II BTII/SOFT	-HR-F (SKY	ZUN)	1.292998		
EPACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	4.400000	E-01	
	ישודושו				
55.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0
55.0 55.0 55.0	55.0	58.0	58.0	58.0	58.0
58.0 55.0 55.0	55.0	55.0	55.0	55.0	55.0

----- THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR -			
			PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	ENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	8.	4987.	43850.	66400.		
HOUR	HO	OURLY FRACT	TION OF PE	AK		
1	.100	.200	.000	.000	55.0	.0
2	.100	.200	.000	.000	55.0	.0
3	.100	.200	.000	.000	55.0	.0
4	.100	.200	.000	.000	55.0	.0
5	1.000	1.000	.200	.200	58.0	.0

```
58.0
                                                                            .0
                                                .400
                        1.000
                                    .400
             1.000
   6
                                                             58.0
                                                                            .0
                                    .400
                                                .400
             1.000
                        1.000
   7
                                                .200
                                                             58.0
                                    .200
   8
             1.000
                        1.000
                                    .200
                                                .200
                                                             58.0
                        1.000
   9
             1.000
                                    .300
                                                                            .0
                        1.000
                                               .300
                                                             58.0
  10
             1.000
                                                                            .0
                                                             58.0
                                    .600
             1.000
                        1.000
                                               .600
  11
                                                .200
                                                             58.0
                                                                            .0
                                    .200
                        1.000
  12
             1.000
                                                .200
                                    .200
                                                             58.0
                                                                            .0
                        1.000
             1.000
  13
                                    .200
                                               .200
                                                                            .0
                                                             58.0
                        1.000
             1.000
  14
                                    .400
                                                                            .0
                                                .400
                                                             58.0
             1.000
                        1.000
  15
                                                             58.0
                                                                            .0
                                                .800
             1.000
                        1.000
                                    .800
  16
                                                .200
                                                                            .0
                                                             58.0
                                    .200
  17
             1.000
                        1.000
                                    .600
                                               .600
                                                             58.0
                                                                            .0
                        1.000
  18
             1.000
                                                                            .0
                                    .300
                                               .300
                        1.000
                                                             58.0
             1.000
  19
                                                                            .0
                                                .000
                                    .000
                                                             58.0
              .100
                         .200
  20
                          .200
                                    .000
                                                .000
                                                             55.0
                                                                            .0
              .100
  21
                                                .000
                                                                            .0
                          .200
                                     .000
                                                             55.0
              .100
  22
                                     .000
                                                .000
                          .200
                                                             55.0
                                                                            .0
  23
              .100
                                    .000
                                               .000
                                                                            .0
                         .200
                                                             55.0
  24
              .100
                                                60.000000
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT)
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                    100.000000
SYSTEM TYPE, (IECN)
                           26500.000000
SUPPLY AIR CFM (SACFM)
ECONOMIZER HIGH TEMP LIMIT F 100.000000
SYSTEM SUPPLY AIR START TIME HR
                                      0.00000E+00
SYSTEM SUPPLY AIR STOP TIME HR
                                       24.000000
                                       70.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
FAN EFFICIENCY (EFAN) 5.500000E-01
                                               6.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP) 3.750000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1919350.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2399188.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                              .300
                                                        .369
                                                                     .400
                                                                                .451
                        .200
                                   .286
 .100
            .191
                                   .625
                                              .700
                                                        .718
                                                                    .800
                                                                                .812
            .537
                        .600
 .500
 .900
            .906
                       1.00
                                   1.00
CHILLER TYPE (ITYPCH) 4
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                               1.00000E-10
COOLING PLANT RATED INPUT BTU (CFLIN)
                                              0.00000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                         .000
                                                                     .000
                                                                                .000
            .000
                        .000
                                   .000
                                              .000
 .000
                                                         .000
                                                                     .000
                                                                                .000
                        .000
                                   .000
                                              .000
            .000
 .000
 .000
            .000
                        .000
                                   .000
```

BLDG 826 - GYMNASIUM DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	1 LOAD 0. -433.	GAIN LOSS	SOLAR THRU WINDOW 2.	ROOF	PARTITI DOOR AND SLAB 0. -10.	BSMT	WALL 2. -50.	WINDOW 0. -1.	VENT AND INFL 0.	LATENT O. O.
FEB	0. -344.	GAIN LOSS	2.	0. -24.	0. -8.	0. 0.	5. -34.	0. -1.	1. -311.	o. o.
MAR	0. -276.	GAIN LOSS	2.	0. -19.	0. -7.	0. 0.	12. -24.	0. -1.	3. -272.	0. 0.
APR	0. -86.	GAIN LOSS	2.	0. -9.	0. -4.	0. 0.	23. -8.	0. 0.	8. -126.	o. o.
MAY	.00 -12.65	GAIN LOSS	2.36	1.11 -3.68	.31 -2.15	.00	31.06 -1.91	.03 18	10.14 -77.19	.00
JUN	.00 01			1.46 -2.66	.29 -1.94		32.06 -1.11	.02 16	9.58 -65.93	.00
JUL	.00	GAIN LOSS	2.43	1.64 -2.79	.31 -1.95				11.14 -69.50	.00
AUG	.00	GAIN LOSS	2.11	1.23 -2.86	.34 -1.85	.00	28.88 -1.26	.03 15	10.87 -65.62	.00
	.00 -10.76		1.90	.31 -4.74	.34 -2.00	.00	23.34 -2.00	.03 17	11.58 -66.79	.00
OCT	0. -68.		2.	0. -10.	0. -3.	0.	16. -7.	0. 0.	8. -102.	0. 0.
	0. -193.	GAIN LOSS	1.	0. -17.	0. -5.	0. 0.	7. -21.	o. o.	4. -190.	0. 0.
DEC	0. -448.		1.	0. -30.	0. -10.	0. 0.	2. -51.	0. -1.	1. -390.	0. 0.
	0. -1872.		23.	6. -155.	2. -56.	0.	213. -202.	0. -5.	78. -2112.	0.
	HEATING COOLING		-191	9350. 1	BTUH ON BTUH ON	DEC 18 DEC 31	HOUR 9	AME AME	BIENT TEM BIENT TEM	P 3.

ZONE UA BTU/HR-F 6098.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-1.I BLDG 826 - GYMNASIUM DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTEF TEME	RNAL S PERATO MAX	JRE F	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	57.	66.	54.	4 29	16	63. 4 11.	4.16	5.90	5.38	29.24
FEB	57.	69.	54.	13 8	16 23		3.76	5.33	4.66	26.22
MAR	58.	81.	55.	28 15			4.16	5.90	4.66	28.53
APR	63.	88.	53.	30 16	_	-	4.03	5.71	4.36	27.46
MAY	69.	94.	55.	26 11			4.16	5.90	4.05	27.91
JUN	76.	96.	56.	30 18		9 82. 3 56.	4.03	5.71	3.65	26.74
JUL	81.	105.	58.	28 10		8 90. 4 57.	4.16	5.90	3.82	27.69
AUG	79.	100.	59.	29 25			4.16	5.90	4.00	27.86
SEP	72.	99.	53.	2 17		8 86. 1 50.	4.03	5.71	3.63	26.73
OCT	63.	88.	54.	1 15			4.16	5.90	4.39	28.25
NOV	59.	78.	55.	8			4.03	5.71	4.63	27.73
DEC	57.	69.	53.	23 18		7 62. 4 1.	4.16	5.90	5.01	28.87
YEAR							48.98	69.51	52.24	333.23

BLDG 826 - GYMNASIUM DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		OURS WHEN NOT MET OLING	MAXIMUM BTU HEATING	
JAN	687	0	0	0	1730E+07	.0000
FEB	607	0	0	0	1549E+07	.0000
MAR	567	0	0	0	1356E+07	.0000
APR	314	0	0	0	8746E+06	.0000
MAY	83	0	0	0	5409E+06	.0000
JUN	1	0	0	0	-9489.	.0000
JUL	0	0	0	0	.0000	.0000
AUG	0	0	0	0	.0000	.0000
SEP	93	0	0	0	3990E+06	.0000
OCT	318	Ö	0	0	6782E+06	.0000
NOV	461	Ö	0	0	1155E+07	.0000
DEC	689	Ō	8	0	1919E+07	.0000
YEAR	3820	Ö	8	0	1919E+07	.0000

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	650.45	.00	4.16	5.90	1.58	29.24	10.6
FEB	538.19	.00	3.76	5.33	1.37	26.22	10.6
MAR	454.57	.00	4.16	5.90	1.37	28.53	10.6
APR	186.20	.00	4.03	5.71	1.28	27.46	10.6
MAY	41.62	.00	4.16	5.90	1.19	27.91	10.6
JUN	.46	.00	4.03	5.71	1.07	26.74	10.6
JUL	.00	.00	4.16	5.90	1.12	27.69	10.6
AUG	.00	.00	4.16	5.90	1.17	27.86	10.6
SEP	43.55	.00	4.03	5.71	1.06	26.73	10.6
OCT	171.35	.00	4.16	5.90	1.29	28.25	10.6
NOV	338.75	.00	4.03	5.71	1.36	27.73	10.6
DEC	673.19	.00	4.16	5.90	1.47	28.87	10.6
YEAR	3098.32	.00	48.98	69.51	15.31	333.23	10.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 170840. BTU/(SQFT-YEAR)

BLDG 826 - GYMNASIUM DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

MONTE	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	1730E+07
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.0000	1549E+07
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.0000	1356E+07
APR	2312.	1600.	1.000	55.	0.	٥.	0	0	.0000	8746E+06
MAY	2566.	1826.	1.000	65.	0.	ο.	0	0	.0000	5409E+06
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.0000	-9489.
JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.0000	.0000
AUG	2280.	1840.	1.000	76.	0.	ο.	0	0	.0000	.0000
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.0000	3990E+06
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.0000	6782E+06
NOV	1039.	732.	1.000	47.	0.	0.	0	0	.0000	1155E+07
DEC	883.	604.	1.000	35.	0.	0.	0	8	.0000	1919E+07

BLDG 826 - GYMNASIUM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
                                               1.000000
WEEKEND INTERNAL GAINS FACTOR (WKEND)
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
                                    1.000000
SKY CLEARNESS FACTOR (CLN)
                                1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
                 YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1)
                               37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
                                                      20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)
                                                     70.000000
                                                  70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 553768.100000
FLOOR AREA (SQFT) 19827.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1919350.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 1919350.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
                                            2146.000000
INFILTRATION PROFILE
                                                     .000
                                                                           1.00
                                           .000
                                                                 .000
                      .000
                                 .000
           .000
 .000
                                                                           1.00
                      1.00
                                 1.00
                                           1.00
                                                      1.00
                                                                 1.00
            1.00
 1.00
                                          .000
                                                      .000
                                                                 .000
                                                                           .000
                                 .000
            .000
                      .000
 .000
A FACTOR IN INFILTRATION EQUATION (CINA)
                                             2.330000E-01
B FACTOR IN INFILTRATION EQUATION (CINB)
                                            2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
                                            48600.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF)
                                             488.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
                          115.000000
DOOR UA BTU/HR-F (DUA)
WINDOW GLASS NUMBER (NG)
                                   30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO)
                                            6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN)
                                              6.930472E-01
WINDOW SHADING FACTOR (SHD) 6.200000E-01
```

	WALL DAT	ra		
WALL NUMBER	1	2	3	4
AZIMUTH ANGLE (AZ)	.00	90.00	180.00	-90.00
WALL AREA SOFT (AWLL)	6029.0	2660.0	5718.0	3378.0
WINDOW AREA SQFT (AWND)	55.0	.0	42.0	.0
WINDOW HEIGHT FT (WNDH)	10.0	10.0	10.0	10.0
WINDOW WIDTH FT (WNDW)	5.5	.0	4.2	.0
WIDTH OF OVERHANG (WOH)	.0	.0	.0	.0
OVERHANG HGT ABV WNDW(HOH)	.0	.0	.0	.0

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS	.245	.245	.245	.245
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB	.01837	.01837	.01837	.01837
WIMPED OF BN FACTORS (NB	5	5	5	5
NUMBER OF BR FROIDER (ND	J	<u> </u>		
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00283	.00283	.00283
N=3	.01017	.01017	.01017	.01017
N=4	.00498	.00498	.00498	.00498
N=5	.00037	.00037	.00037	.00037
N-6	*****	*****	*****	****
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS				
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50943
N=3	.65654	.65654	.65654	.65654
N=4	07415	07415	07415	07415
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	*****	****
POOR APRA SOFT (AROF) 1982/	-000000			
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y	F) 7.90	0000E-02	_	
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	5.0351	65E-03		
DOOR D TRANSFER FUNCTIONS (RNR	1			
.868E-04 .217E-02 .252E-02	.260E-03	867.	867.	
ROOF D TRANSFER FUNCTIONS (DAR 1.00 -1.16 .223 SKYLIGHT TILT DEGREES (TILT)	220E-02	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
CTVT TCUT AVIMITE ANGLE DEGEROS	IACOAI	22226000	000	
SKYLIGHT HEIGHT FT (SKH) 0.	000000E+00			
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
SKYLIGHT OVERHANG WIDTH FT (SK	UW; U.U	000005+00	00=100	
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	OOE+OO	
SKYLIGHT GLASS NUMBER (NS)	1		•	
SKYLIGHT GLASS NOMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	SHSK) O	.000000E+0	1	1
SUMMER START MONTH AND DAY FOR	SHSK (MST	,NDST)	, ±	1
SUMMER END MONTH AND DAY FOR S	HSK (MND,N	עסאט)	1	
SKY LIGHT AREA SQFT (ASKY)	0.000000E+	1	202000	
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	K-E (SKIU)		1 20200	
NIGHT TIME SKYLIGHT U BTU/SQFT	באכן ב־אתר מים זגוגמשת	CE (EVD)	4 400000	E-01
FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FRF)	4.40000	

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F KW - - - - - BTU/HR - - - - -PEOPLE PEOPLE HEATING COOLING LIGHTS PROCESS SENSIBLE LATENT 8. 4987. 43850. 66400. --- HOURLY FRACTION OF PEAK ---PEAK VAL HOUR .000 .0 .100 60.0 .200 .000 1 .000 .0 60.0 .100 .000 .200 2 .000 60.0 .0 .000 .100 .100 3 .200 .0 .000 .000 60.0 .200 4 .0 .200 60.0 .200 1.000 1.000 5 .400 60.0 .0 .400 6 1.000 1.000 .400 .0 .400 60.0 7 1.000 1.000 .200 .200 .0 60.0 1.000 8 1.000 .0 1.000 .200 60.0 .200 1.000 9 .0 10 .300 .300 60.0 1.000 1.000 .600 .0 60.0 11 1.000 1.000 .600 .0 .200 .200 60.0 1.000 12 1.000

13 14 15 16 17 18 19 20 21 22 23 24 NO HEATI NO COOLI	1.000 .100 .100 .100 .100 .100 NG ABOVE AM	1.000 1.000 1.000 1.000 1.000 200 .200	.200 .400 .800 .200 .600 .300 .000 .000 .000 .000	.200 .400 .800 .200 .600 .300 .000 .000	60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0		.0
SYSTEMI	YPE. (IECN)	4	4				
SUPPLY A	IR CFM (SAC	FM) 2650	0.000000	2000			
ECONOMI 2	ER HIGH TEM SUPPLY AIR S	P LIMIT F	100.00 100.00	00000 0000E+00			
SYSTEM S	SUPPLY AIR S	TAKI TIME H	R 24	000000			
CVCTTM N	TYED ATR TE	MP(TMXAIR)	70.00	JUUUU			
MIN OUTS	IDE AIR FRA	CTION OF S	ACFM (OAFR	6.000	000E-01		
TAN EFFT	CIENCY (EFA	N) 5.50	0000E-01				
БУИ ТОТА	T. PRESSURE	IN. WATER	(DP) 3	.750000E-0	1		
HEATING	PLANT RATED	OUTPUT BT	U (HFLOT) :	1919350.00	0000		
HEATING	PLANT RATED	INPUT BTU	(HFLIN)	. 4234188.00	T.#1		
	PLANT PART	LOAD VS FR	AC OF INPU	300 (F	.369	.400	.451
.100	.191	.200	.200	.500			
.500	.537	.600	.625	.700	.718	.800	.812
900	.906	1.00	1.00				
CULTITUD	MYDE /ITYDO	TI \	4				
				1.00000	0E-10		
COOT. TNG	PLANT RATEL	INPUT BTU	(CFLIN)	0.000000	E+UU		
COOLING	PLANT PART	LOAD FRAC	VS FRAC RA	TED COB (F	(בוני	.000	.000
.000	.000	.000	.000	.000	.000	•000	.000
.000	.000	.000	.000	.000	.000	.000	.000

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-4.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

JAN	H LOAD 0. -476.	GAIN	2.	ROOF	U.	BSMT 0.		٠.	VENT AND INFL 0402.	LATENT O. O.
									1. -335.	0.
MAR	0. -315.								2. -297.	
APR	0.	GAIN	2.	0.	0.	0.	20.	0.	7. -139.	0.
	-109.	LOSS		-11.	-4.	0.	-12.	0.	-139.	0.
MAY	.00	GAIN	2.36	.93	.29	.00	29.58	.02	9.57	.00
	-20.74	LOSS		-4.54	-2.53	.00	-3.34	21	-80.33	.00
TIIN	00	GATN	2.41	1.34	.28	.00	31.36	.02	9.48 -63.93	.00
OUN	31	LOSS		-3.04	-2.12	.00	-1.77	17	-63.93	.00
7777	00	CAIN	2.43	1.53	.30	.00	31.26	.03	11.06	.00
OOL	04	LOSS	2.45	-3.17	-2.13	.00	-1.89	18	11.06 -67.54	.00
BIIC	00	CATN	2 11	1.12	. 33	- 00	28.22	.03	10.80	.00
AUG	.00	LOSS	2.11	-3.22	-2.02	.00	-1.90	17	-63.60	.00
CED	00	CATA	1 90	21	31	. 00	21.95	.03	10.90 -70.57	.00
SEP	-20.12	LOSS	1.90	-5.76	-2.41	.00	-3.73	20	-70.57	.00
o a m	0	CATAI	2	0	٥.	٥.	14.	0.	7.	0.
OCT	-94.	LOSS	2.	-12.	-4.	o.	-11.	0.	7. -118.	0.
***	0.	CATN	1	0	0	0.	6.	0.	3.	0.
NOV	-225.		1.	-20.	-6.	o.	-27.	-1.	3. -210.	0.
DEC.	0	CATN	1	0	0	٥.	1.	0.	0.	0.
DEC	- 4 89.	LOSS	1.	-34.	-11.	o.	-60.	-1.	0. -415.	0.
101	-2131.	LOSS	23.	-179.	-66.	0.	-256.	-6.	73. -2262.	0.
MAX	HEATING	LOAD=	-191	9350.	BTUH ON	DEC 18	HOUR 9	AME	SIENT TEM	P 3.
MAX	COOLING	LOAD=		0. 1	BTUH ON	DEC 31	HOUR 24	AME	BIENT TEM	P 42.

ZONE UA BTU/HR-F 6098.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-4.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER		SPACE URE F MIN	DAY		COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
			••••				4.10	F 00	5.39	29.25
JAN	60.	66.	59.	4 29	16	6 63. 4 11.	4.16	5.90	3.39	29.23
FEB	60.	69.	60.	13 13	16 22		3.76	5.33	4.74	26.30
MAR	61.	80.	59.	28 9			4.16	5.90	4.83	28.69
APR	65.	88.	58.	30 1		6 84. 6 61.	4.03	5.71	4.50	27.60
MAY	70.	95.	59.	26 11			4.16	5.90	4.05	27.92
JUN	77.	98.	60.	30 19		9 82. 5 58.	4.03	5.71	3.65	26.74
JUL	81.	106.	60.	28 10		9 82. 4 57.	4.16	5.90	3.82	27.69
AUG	80.	101.	61.	11 25		9 84. 4 54.	4.16	5.90	4.00	27.86
SEP	73.	99.	58.	2 14			4.03	5.71	3.68	26.78
OCT	65.	88.	59.	1 17			4.16	5.90	4.48	28.35
NOV	62.	78.	59.	8 13			4.03	5.71	4.77	27.86
DEC	60.	69.	55.	23 18		8 55. 8 1.	4.16	5.90	5.18	29.04
YEAR							48.98	69.51	53.09	334.07

826-4.I

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 826 - GYMNASIUM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF HOLD LOADS WERE HEATING CO		N MAXIMUM BTU HEATING	
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT	714 628 607 372 134 7 2 0 134 380	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	1777E+07 1558E+07 1343E+07 8834E+06 5601E+06 1031E+06 3169E+05 .0000 3794E+06 6932E+06	.0000 .0000 .0000 .0000 .0000 .0000 .0000
NOV DEC YEAR	522 712 4 212	0 0 0	0 9 9	0 0 0	1184E+07 1919E+07 1919E+07	.0000 .0000

SYSTEM TOTALS

		ENERG	Y CONSUMPT	TOTAL INTERNAL MAXIMUM			
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH		KWH	KWH	BTU	KWH	BTU	KW
JAN	704.31	.00	4.16	5.90	1.58	29.25	10.6
FEB	583.67	.00	3.76	5.33	1.39	26.30	10.6
MAR	507.08	.00	4.16	5.90	1.41	28.69	10.6
APR	228.73	.00	4.03	5.71	1.32	27.60	10.6
MAY	67.82	.00	4.16	5.90	1.19	27.92	10.6
JUN	3.20	.00	4.03	5.71	1.07	26.74	10.6
JUL	.91	.00	4.16	5.90	1.12	27.69	10.6
AUG	.00	.00	4.16	5.90	1.17	27.86	10.6
SEP	65.29	.00	4.03	5.71	1.08	26.78	10.6
OCT	215.16	.00	4.16	5.90	1.31	28.35	10.6
NOV	391.31	.00	4.03	5.71	1.40	27.86	10.6
DEC	721.87	.00	4.16	5.90	1.52	29.04	10.6
YEAR	3489.36	.00	48.98	69.51	15.55	334.07	10.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 190605. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-4.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	TEMP.	DRIFT	SYSTEM	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
1041.	675.	1.000	35.	0.	0.	0	0	.0000	1777E+07
1464.	929.	1.000	37.	0.	ο.	0	0	.0000	1558E+07
1922.	1254.	1.000	43.	0.	0.	0	0	.0000	1343E+07
2312.	1600.	1.000	55.	0.	0.	0	0	.0000	8834E+06
2566.	1826.	1.000	65.	0.	0.	0	0	.0000	5601E+06
2647.	1993.	1.000	72.	0.	0.	0	0	.0000	1031E+06
2546.	2015.	1.000	77.	0.	0.	0	0	.0000	3169E+05
2280.	1840.	1.000	76.	0.	0.	0	0	.0000	.0000
1856.	1371.	1.000	68.	0.	0.	0	0	.0000	3794E+06
1437.	953.	1.000	57.	0.	0.	0	0	.0000	6932E+06
1039.	732.	1.000	47.	0.	0.	0	0	.0000	1184E+07
883.	604.	1.000	35.	0.	0.	0	9	.0000	1919E+07
	DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY 1041. 1464. 1922. 2312. 2566. 2647. 2546. 2280. 1856. 1437. 1039.	DAY ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY DAY 1041. 675. 1464. 929. 1922. 1254. 2312. 1600. 2566. 1826. 2647. 1993. 2546. 2015. 2280. 1840. 1856. 1371. 1437. 953. 1039. 732.	DAY ACTUAL SOLAR SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. BTU/ BTU/ SQFT- PF FACTOR 1041. 675. 1.000 1464. 929. 1.000 1922. 1254. 1.000 2312. 1600. 1.000 2566. 1826. 1.000 2546. 2015. 1.000 2546. 2015. 1.000 1856. 1371. 1.000 1437. 953. 1.000 1039. 732. 1.000	DAY ACTUAL SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. SURF. BTU/ BTU/ SQFT- PF DEG. TACTOR F DAY DAY FACTOR F 1041. 675. 1.000 35. 1464. 929. 1.000 37. 1922. 1254. 1.000 43. 2312. 1600. 1.000 55. 2566. 1826. 1.000 65. 2647. 1993. 1.000 72. 2546. 2015. 1.000 77. 2280. 1840. 1.000 76. 1856. 1371. 1.000 68. 1437. 953. 1.000 57. 1039. 732. 1.000 47.	DAY ACTUAL SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. SURF. BTU/ BTU/ SQFT- PF DEG. DEG. TEMP. 1041. 675. 1.000 35. 0. 1464. 929. 1.000 37. 0. 1922. 1254. 1.000 43. 0. 2312. 1600. 1.000 55. 0. 2566. 1826. 1.000 65. 0. 2647. 1993. 1.000 72. 0. 2546. 2015. 1.000 77. 0. 2280. 1840. 1.000 76. 0. 1856. 1371. 1.000 68. 0. 1437. 953. 1.000 57. 0. 1039. 732. 1.000 47. 0.	DAY ACTUAL SOLAR SOLAR INSOL. INSOL. HORIZ. HORIZ. SURF. SURF. BTU/ BTU/ SQFT- PF DEG. DEG. F TOAY DAY FACTOR F + - 1041. 675. 1.000 35. 0. 0. 1464. 929. 1.000 37. 0. 0. 1922. 1254. 1.000 43. 0. 0. 1922. 1254. 1.000 43. 0. 0. 2312. 1600. 1.000 55. 0. 0. 2566. 1826. 1.000 65. 0. 0. 2546. 2015. 1.000 77. 0. 0. 2280. 1840. 1.000 76. 0. 0. 1856. 1371. 1.000 68. 0. 0. 1437. 953. 1.000 57. 0. 0. 1039. 732. 1.000 47. 0. 0.	DAY ACTUAL SOLAR INSOL. HORIZ. SURF. SURF. SURF. BTU/ SQFT- DAY DAY FACTOR F	DAY SOLAR SOLAR INSOL. HORIZ. HORIZ. SURF. BTU/ BTU/ SQFT- DAY FACTOR F	DAY SOLAR SOLAR INSOL. HORIZ. SURF. BTU/ BTU/ DAY DAY FACTOR F +

BLDG 826 - GYMNASIUM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                     YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 553768.100000
FLOOR AREA (SQFT) 19827.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 1919350.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) 0.000000E+00 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 1919350.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 2146.000000
INFILTRATION PROFILE
                                                                                                   .000
                                                    1.00 1.00 1.00
                          1.00
                                            1.00
              1.00
                                                                      .000
                                                                                     .000
                                                                                                   .000
         .000 .000 .000
  .000
                                                                        1.00
                                                                                      1.00
                                                                                                    1.00
                                                        1.00
         1.00
                            1.00 1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)

2.330000E-01
2.165000E-02
8.330000E-03
48600.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 488.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 115.000000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01 NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 6.200000E-01
WALL DATA
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .245	120.0 .245	120.0 .245	120.0 .245
WALL TRANSFER FUNCTIONS		01027	01027	01027
CN FACTORS NUMBER OF BN FACTORS (NB	.01837	.01837	.01837	.0183/
NUMBER OF BN FACTORS (NB	5	5	5	5
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)		00003	00003	00003
N=1	.00003	.00003	.00003	.00003
N=2	.00283	.00283	.00283	01017
N=3	.01017	.01017	.01017	.01017
N=4	.00498	.00498	.00490	000430
N=5	.00037	.00037	.00037	.00037
N=6	*****	****	****	F
NUMBER OF DN FACTORS (ND)	5	5	5	5
DN FACTORS		4 00000	1 00000	1 00000
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.50943	-1.50943	-1.50943	-1.50343
N=3	.65654	.65654	.00004	03034
N=4	07415	07415	0/415	0/413
N=5	.00212	.00212	.00212	.00212
N=6	*****	*****	******	*******
- DOOR ADEA CORT (ADOR) 19827	. 000000			
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y	F) 7.90	0000E-02		
ROOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1	
ROOF C TRANSFER FUNCTION (CNR)	5.0351	65E-03		
DOOR D TRANSFER FUNCTIONS (BNR	1			
.868E-04 .217E-02 .252E-02	.260E-03	867.	867.	
POOR D TRANSFER FUNCTIONS (DNR	.)			
1 00 -1 16 .223	220E-02	999.	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000	E+00		
EVVITOUT AZIMITH ANGLE DEGREES	(AZSK)	9999.000	000	
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00			
SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
EVVITCUT OVERHANG WIDTH FT (SK	OWI U.U			
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
SKYLIGHT SHADING COEFFICIENT (SHSK) 0	.000000E+0	0	_
SUMMER START MONTH AND DAY FOR	SHSK (MST	',NDST)	. 1	_ 1
SUMMER END MONTH AND DAY FOR S	HSK (MND, N	DND)	1	1
SKY LIGHT AREA SQFT (ASKY)	O.00000E+	00		
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)	1.	292998	
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SKY	UN)	1.292998	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	CE (FAP)	4.400000	E-01

-----INTERNAL GAINS AND PROFILES -----

THERMOSTAT SET POINT DEG F

					FOIRI D	D0 1
	KW -	- -	- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	8.	4987.	43850.	66400.		
HOUR	HO	OURLY FRACT	TION OF PE			_
1	.100	.200	.000	.000	60.0	.0
2	.100	.200	.000	.000	60.0	.0
3	.100	.200	.000	.000	60.0	.0
4	.100	.200	.000	.000	60.0	.0
5	1.000	1.000	.200	.200	60.0	.0
6	1.000	1.000	.400	.400	60.0	.0
7	1.000	1.000	.400	.400	60.0	.0
8	1.000	1.000	.200	.200	60.0	.0
9	1.000	1.000	.200	.200	60.0	.0
10	1.000	1.000	.300	.300	60.0	.0
11	1.000	1.000	.600	.600	60.0	.0
12	1.000	1.000	.200	.200	60.0	.0

```
.0
                                                                60.0
                                      .200
                         1.000
                                                  .200
              1.000
  13
                                                                60.0
                                                                               .0
                                                  .200
              1.000
                         1.000
                                      .200
  14
                                                  .400
                                      .400
                                                                60.0
                                                                               .0
  15
              1.000
                         1.000
                                      .800
                                                  .800
                                                                60.0
                                                                               .0
                         1.000
  16
              1.000
                                      .200
                                                                               .0
                         1.000
                                                  .200
                                                                60.0
  17
              1.000
                                                                               .0
                                                  .600
                                                                60.0
                                      .600
              1.000
                         1.000
  18
                                                  .300
                                                                60.0
                                                                               .0
                                      .300
                         1.000
  19
              1.000
                                                  .000
                                                                60.0
                                                                               .0
                          .200
                                      .000
              .100
  20
                                      .000
                                                                               .0
                                                  .000
                                                                60.0
                           .200
               .100
  21
                           .200
                                      .000
                                                                60.0
                                                                               .0
               .100
                                                  .000
  22
                                                                               .0
                                                                60.0
               .100
                           .200
                                                  .000
                                      .000
  23
                                                                               .0
                                                  .000
                                                                60.0
                                      .000
  24
               .100
                           .200
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
                                                       60.000000
                                                      100.000000
SYSTEM TYPE, (IECN)
                             26500.000000
SUPPLY AIR CFM (SACFM)
                                       100.000000
ECONOMIZER HIGH TEMP LIMIT F
SYSTEM SUPPLY AIR START TIME HR
                                        0.00000E+00
SYSTEM SUPPLY AIR STOP TIME HR
                                           24.000000
                                        70.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                                 6.000000E-01
                           5.500000E-01
FAN EFFICIENCY (EFAN)
FAN EFFICIENCE (EFRIT)
FAN TOTAL PRESSURE IN. WATER (DP) 3.750000E-01
HEATING PLANT RATED OUTPUT BTU (HFLOT) 1919350.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 2399188.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                                   .451
                                                           .369
                                                                       .400
                                                .300
                                    .286
             .191
                        .200
                                                           .718
                                                                       .800
                                                                                   .812
                        .600
                                    .625
                                                .700
 .500
             .537
 .900
             .906
                        1.00
                                    1.00
CHILLER TYPE (ITYPCH)
                                     4
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                                1.000000E-10
COOLING PLANT RATED INPUT BTU (CFLIN)
                                               0.000000E+00
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                                   .000
                                               .000
                                                           .000
                                                                       .000
             .000
                        .000
                                    .000
 .000
                                                                       .000
                                                                                   .000
                                                            .000
                                    .000
                                                .000
             .000
                         .000
 .000
                                    .000
 .000
             .000
                         .000
```

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-5.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD 0. -491.	GAIN	2.	ROOF	U.	BSMT	4.	0.	VENT AND INFL 0418.	LATENT 0.
FEB	0. -395.	GAIN LOSS	2.	0. -27.	0. -9.	0. 0.	3. -42.	0. -1.	0. -348.	0. 0.
MAR	0. -327.	GAIN LOSS	2.	0. -22.	0. -8.	0. 0.	10. -30.	0. -1.	2. -309.	o. o.
APR	0. -115.	GAIN LOSS	2.	0. -11.	0. -4.	0. 0.	21. -11.	0. 0.	7. -146.	0. 0.
	.00 -22.86		2.36	1.04 -4.18	.32 -2.38	.00	30.30 -2.72	.03 19	9.03 -83.93	.00
JUN	.00 36		2.41	1.47 -2.66	.30 -1.95	.00	-1.14	16	9.00 -65.75	.00
JUL	.00 05	GAIN LOSS	2.43	1.67 -2.76	.33 -1.96	.00	32.05 -1.19	.03 16	10.59 -69.20	.00
AUG	.00 01		2.11	1.28 -2.82	.37 -1.85	.00	29.09 -1.23	.03 15	10.20 -65.35	.00
SEP	.00 -22.64	GAIN LOSS	1.90	.27 -5.39	.34 -2.28	.00	22.55 -3.15	.03 19	10.36 -74.34	.00
OCT	0. -100.		2.	0. -12.	0. -4.	0. 0.	14. -11.	0. 0.	7. -124.	o. o.
	0. -235.		1.	0. -20.	0. -6.	0. 0.	6. -27.	0. -1.	3. -220.	o. o.
DEC	0. -503.	GAIN LOSS							0. -429.	
	0. -2210.		23.	6. -176.	2. -65.	0. 0.	203. -251.	0. -5.	69. -2352.	0.
MAX MAX	HEATING COOLING	LOAD=	-191	9350. I 0. I	BTUH ON I	DEC 18 DEC 31	HOUR 8	AMI AMI	BIENT TEM BIENT TEM	iP 1. iP 42.

ZONE UA BTU/HR-F 6098.8

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-5.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE	RNAL S				COIN- CIDENT	LIGHTING THOUSAND	PROCESS MILLION	HEAT MILLION	HEAT GAIN MILLION
MONTH	AVG.	MAX	MIN	DAY	HR	AMBT.	KWH	BTU	BTU	BTU
JAN	60.	66.	59.	4 29	16		4.16	5.90	5.39	29.25
FEB	60.	68.	59.	13 2	16	6 68. 3 15.	3.76	5.33	4.76	26.32
MAR	61.	81.	59.	28 12	16	5 76. 1 58.	4.16	5.90	4.85	28.71
APR	65.	89.	58.	30 1		6 84. 6 61.	4.03	5.71	4.53	27.63
MAY	70.	94.	59.	26 9	19 20		4.16	5.90	4.05	27.92
JUN	76.	96.	60.	30 19	19	9 82. 5 58.	4.03	5.71	3.65	26.74
JUL	81.	105.	60.	28 10		8 90. 4 57.	4.16	5.90	3.82	27.69
AUG	79.	100.	60.	29 25	10	6 95. 6 51.	4.16	5.90	4.02	27.88
SEP	73.	99.	59.	2 16		8 86. 9 61.	4.03	5.71	3.71	26.80
OCT	65.	88.	59.	1 3		5 85. 2 58.	4.16	5.90	4.52	28.39
NOV	62.	79.	59.	8 9			4.03	5.71	4.78	27.88
DEC	60.	68.	53.	23 18		7 62. 4 1.	4.16	5.90	5.19	29.05
YEAR							48.98	69.51	53.28	334.26

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-5.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER		OURS WHEN NOT MET OLING	MAXIMUM BTU HEATING	
MONTH	HEALING	Doomonia				
JAN	715	0	0	0	1897E+07	.0000
FEB	631	Ö	0	0	1654E+07	.0000
MAR	612	0	0	0	1423E+07	.0000
APR	376	0	0	0	9515E+06	.0000
MAY	133	Ō	0	0	6114E+06	.0000
JUN	7	Õ	0	0	1034E+06	.0000
JUL	· 2	Ō	0	0	3945E+05	.0000
AUG	3	Ö	0	0	-7507.	.0000
SEP	139	Ö	0	0	4159E+06	.0000
OCT	389	Ô	Ö	0	7569E+06	.0000
NOV	523	Ô	Ō	0	1272E+07	.0000
DEC	714	Ô	11	0	1919E+07	.0000
YEAR	4244	ŏ	11	0	1919E+07	.0000

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-5.I

SYSTEM TOTALS

	HEATING	ENERG COOLING	Y CONSUMPT	ION PROCESS	TO FANS	OTAL INTERNAL HEAT GAIN	MAXIMUM ELECTRIC
MONTH	MILLION BTU	THOUSAND KWH	THOUSAND KWH	MILLION BTU	THOUSAND KWH	MILLION BTU	DEMAND KW
JAN	721.14	.00	4.16	5.90	1.58	29.25	10.6
FEB	598.16	.00	3.76	5.33	1.40	26.32	10.6
MAR	520.15	.00	4.16	5.90	1.42	28.71	10.6
APR	235.79	.00	4.03	5.71	1.33	27.63	10.6
MAY	68.77	.00	4.16	5.90	1.19	27.92	10.6
JUN	3.20	.00	4.03	5.71	1.07	26.74	10.6
JUL	.91	.00	4.16	5.90	1.12	27.69	10.6
AUG	1.37	.00	4.16	5.90	1.18	27.88	10.6
SEP	68.33	.00	4.03	5.71	1.09	26.80	10.6
OCT	223.77	.00	4.16	5.90	1.33	28.39	10.6
NOV	402.10	.00	4.03	5.71	1.40	27.88	10.6
DEC	737.44	.00	4.16	5.90	1.52	29.05	10.6
YEAR	3581.12	.00	48.98	69.51	15.61	334.26	10.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 195243. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 826-5.I

BLDG 826 - GYMNASIUM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. AMBT. DEG. F	MAX SYS TEMP. I DEG.	DRIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
1041.	675.	1.000	35.	0.	0.	0	0	.0000	1897E+07
1464.	929.	1.000	37.	0.	0.	0	0	.0000	1654E+07
1922.	1254.	1.000	43.	0.	0.	0	0	.0000	1423E+07
2312.	1600.	1.000	55.	0.	0.	0	0	.0000	9515E+06
2566.	1826.	1.000	65.	0.	0.	0	0	.0000	6114E+06
2647.	1993.	1.000	72.	0.	0.	0	0	.0000	1034E+06
2546.	2015.	1.000	77.	0.	0.	0	0	.0000	3945E+05
2280.	1840.	1.000	76.	0.	0.	0	0	.0000	-7507.
1856.	1371.	1.000	68.	0.	0.	0	0	.0000	4159E+06
1437.	953.	1.000	57.	0.	0.	0	0	.0000	7569E+06
1039.	732.	1.000	47.	0.	٥.	0	0	.0000	1272E+07
883.	604.	1.000	35.	0.	0.	0	11	.0000	1919E+07
	2312. 2566. 2647. 2546. 2280. 1856. 1437. 1039.	2312. 1600. 2566. 1826. 2647. 1993. 2546. 2015. 2280. 1840. 1856. 1371. 1437. 953. 1039. 732.	2312. 1600. 1.000 2566. 1826. 1.000 2647. 1993. 1.000 2546. 2015. 1.000 2280. 1840. 1.000 1856. 1371. 1.000 1437. 953. 1.000 1039. 732. 1.000	2312. 1600. 1.000 55. 2566. 1826. 1.000 65. 2647. 1993. 1.000 72. 2546. 2015. 1.000 77. 2280. 1840. 1.000 76. 1856. 1371. 1.000 68. 1437. 953. 1.000 57. 1039. 732. 1.000 47.	2312. 1600. 1.000 55. 0. 2566. 1826. 1.000 65. 0. 2647. 1993. 1.000 72. 0. 2546. 2015. 1.000 77. 0. 2280. 1840. 1.000 76. 0. 1856. 1371. 1.000 68. 0. 1437. 953. 1.000 57. 0. 1039. 732. 1.000 47. 0.	2312. 1600. 1.000 55. 0. 0. 2566. 1826. 1.000 65. 0. 0. 2647. 1993. 1.000 72. 0. 0. 2546. 2015. 1.000 77. 0. 0. 2280. 1840. 1.000 76. 0. 0. 1856. 1371. 1.000 68. 0. 0. 1437. 953. 1.000 57. 0. 0. 1039. 732. 1.000 47. 0. 0.	2312. 1600. 1.000 55. 0. 0. 0 2566. 1826. 1.000 65. 0. 0. 0 2647. 1993. 1.000 72. 0. 0. 0 2546. 2015. 1.000 77. 0. 0. 0 2280. 1840. 1.000 76. 0. 0. 0 1856. 1371. 1.000 68. 0. 0. 0 1437. 953. 1.000 57. 0. 0. 0 1039. 732. 1.000 47. 0. 0. 0	2312. 1600. 1.000 55. 0. 0. 0 0 2566. 1826. 1.000 65. 0. 0. 0 0 2647. 1993. 1.000 72. 0. 0. 0 0 2546. 2015. 1.000 77. 0. 0. 0 0 2280. 1840. 1.000 76. 0. 0. 0 0 1856. 1371. 1.000 68. 0. 0. 0 0 1437. 953. 1.000 57. 0. 0. 0 0 1039. 732. 1.000 47. 0. 0. 0 0	2312. 1600. 1.000 55. 0. 0. 0 0 .0000 2566. 1826. 1.000 65. 0. 0. 0 0 .0000 2647. 1993. 1.000 72. 0. 0. 0 0 .0000 2546. 2015. 1.000 77. 0. 0. 0 0 .0000 2280. 1840. 1.000 76. 0. 0. 0 0 .0000 1856. 1371. 1.000 68. 0. 0. 0 0 .0000 1437. 953. 1.000 57. 0. 0. 0 .0000 1039. 732. 1.000 47. 0. 0. 0 .0000

COMPUTER SIMULATIONS

BUILDING 1350

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 18-Mar-93

DATE: BUILDING NO.:

1350

BLDG. TYPE:

RESERVE CENTER

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	610.9	447.4	373.8	373.8	34.6	54.8
COOLING (kWH)	21900	18495	16358	16243	21900	20193

SUPPLY AIR FAN	15286 CFM
FLOOR AREA	17677 FT ²
CFMI	1188 CFM
UA	3851 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	500	2000	75 HR	HR. ON HEATING	2730 HR/YR
SAT.	500	2000	15 HR	HR. ON COOLING	1830 HR/YR
SUN.	500	2000	15 HR	HR. OFF HEATING	1638 HR/YR
3011.	TOTAL OCCU		105 HR/WK	HR. OFF COOLING	1098 HR/YR
		TOTAL UNOCC. HR.			
	ANNUAL OCC		5475 HR/YR		
	ANNUAL UNC		3285 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

2928 HR/YR

HOUR SAVE (HEATING ONLY) 4368 - 2730 = 1638 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 1830 = 1098 HR/YR

				A COMPANY OF A LID
HOAUHO	610.9 MBtu -	34.6 MBtu	=	1.48E+02 Btu/CFM-HR
	1188 CFM *	3285 HR/YR		
HOAUH	610.9 MBtu -	34.6 MBtu	=	2.96E+02 Btu/CFM-HR
	1188 CFM *	1638 HR/YR		
COAUHC	21900 kWH -	21900 kWH	=	0.00E+00 kWH/CFM-HR
	1188 CFM *	3285 HR/YR		
COAUC	21900 kWH -	21900 kWH	=	0.00E+00 kWH/CFM-HR
	1188 CFM *	1098 HR/YR		
HOAOHC	610.9 MBtu	54.8 MBtu	=	8.55E+01 Btu/CFM-HR
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1188 CFM *	5475 HR/YR		
НОАОН	610.9 MBtu -	54.8 MBtu	=	1.71E+02 Btu/CFM-HR
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1188 CFM *	2730 HR/YR		
COAOHC	21900 kWH	20193 kWH	=	2.62E-04 kWH/CFM-HR
00,	1188 CFM *	5475 HR/YR		
COAOC	21900 kWH	20193 kWH	=	7.85E-04 kWH/CFM-HR
	1188 CFM *	1830 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN

DATE: BUILDING NO .: 18-Mar-93 1350

BLDG. TYPE:

RESERVE CENTER

ENERGY CONSTANT CALCULATIONS

ECC	16358 kWH -	16243 kWH	=	4.11E-06 kWH/CFM-HR	
	15286 CFM *	1830 HR/YR			
ECHC	16358 kWH -	16243 kWH	=	1.37E-06 kWH/CFM-HR	
	15286 CFM *	5475 HR/YR			
NSUCHO	21900 kWH -	18495 kWH	=	6.78E-05 kWH/CFM-HR	
	15286 CFM *	3285 HR/YR			
NSUCC	21900 kWH -	18495 kWH	_ =	2.03E-04 kWH/CFM-HR	
	15286 CFM *	1098 HR/YR			
DDCCHC	18495 kWH -	16358 kWH	_ =	2.55E-05 kWH/CFM-HR	
	15286 CFM *	5475 HR/YR			
DDCCC	18495 kWH -	16358 kWH	_ =	7.64E-05 kWH/CFM-HR	
	15286 CFM *	1830 HR/YR			
NSC	610.9 MBtu -	447.4 MBtu	=	4.25E+04 Btu/UA	
	38 51 l	JA			
DSC	447.4 MBtu -	373.8 MBtu	==	1.91E+04 Btu/UA	
	3851 (JA			
OPT	(2 HR/DAY X 272 DAY/	YR) – 294	HR/YR		
J	(,	=	250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
0	(3.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	•	=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	
O/ 11 1			4		

EMC ENGINEERS. INC. DATE: 16-Feb-93 BHS BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 1350BLZ1 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: RESERVE CENTER BLDG NO: KITCHEN BLDG FUNCTION: # FLOORS 1 648 FLOOR AREA: (SQ. FT) **SLAB PERIMETER: (FT)** 36 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) **EAST** WEST TOTAL NORTH SOUTH 629 743 0 (SQ. FT) 57 57 WALLS, GROSS 6 0 6 0 0 (SQ. FT) GLASS 0 22 22 0 PERSONNEL DOOR (SQ. FT) 0 0 0 0 0 0 (SQ. FT) **INSULATED PANEL** 715 601 0 57 57 WALLS, NET (SQ. FT) (SQ. FT) 648 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 22 0 PERSONNEL DOOR (SQ. FT) INSULATED PANEL 0 0 0 (SQ. FT) 0 **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 AIR SPACE 3 FACE BRICK 5.00 RIGID INSULATION 4. AIR SPACE 2.02 8" L.W. CONC. BLOCK 5. 2" INSULATION 6 8"CMU INSIDE AIR FILM 0.68 9.21 TOTAL R-WALL = 0.109 U=1/RCOMPONENTS R-VALUE ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 SHEET ROOFING 6.68 2" RIGID INSULATION BUILT-UP ROOF 1.00 AIR SPACE 2" INSULATION **BATT INSULATION** 30.00 5. METAL DECKING 1.79 **ACOUSTIC TILE** 6. 0.68 INSIDE AIR FILM TOTAL R-ROOF = 40.65 0.025 U=1/R1.61 **R-GLASS** GLASS TYPE: DOUBLE PANE 0.67 SLF CONCRETE SLAB TYPE FLOOR: R-BASEM 0.00 NONE **BASEMENT TYPE:** 4.20 R-PANEL INSULATED PANEL: NONE R-PDOOR 2.56 PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0.000 0 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 85 0.115 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 5 1.600 X CFM /OPENING /HR DOOR OPENINGS / HR - SINGLE DOOR 0 X CFM /OPENING /HR 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 90 TOTAL INFILTRATION (CFM) = 0 0.238 X PANEL "U" 0 = = PANEL AREA **UA PANEL** 8 0.391 X DOOR 'U' **UA PDOOR** = PDOOR AREA 22 78 X WALL 'U' 0.109 = = WALL AREA 715 **UA WALL** 16 X ROOF "U" 0.025 = ROOF AREA 648 **UA ROOF** 4 X GLASS "U" 0.621 = GLASS AREA 6 **UA GLASS** 24 0.670 X SLF UA SLAB = SLAB PERIM. 36 0 X BASE. "U" 0.000 UA BASEM. =B-WALL AREA 0 93 X A. T. F. 1.035 = 90 INFILTRATION CFM 223 TOTAL UA (BTU/HR°F)

EMCENGINEERS, INC. 24-Feb-93 DATE: BY: TMB PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 AJN CHK: CLIENT PROJ. ENG.: DOUG CAGE 1350BLZ2 FILE: LOCATION: FT LEONARD WOOD BUILDING HEATING LOAD CALCULATION SHEET 1350 BLDG NAME: RESERVE CENTER BLDG NO: SHIPPING / SUPPLY BLDG FUNCTION: 1 # FLOORS 4,728 FLOOR AREA: (SQ. FT) 259 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL NORTH SOUTH EAST 560 3,626 560 (SQ. FT) 1,834 672 WALLS, GROSS 36 12 12 12 0 (SQ. FT) GLASS 0 42 42 126 (SQ. FT) 42 PERSONNEL DOOR 0 0 0 0 0 INSULATED PANEL (SQ. FT) 506 3,464 672 506 1,780 (SQ. FT) WALLS, NET (SQ. FT) 4,728 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 0 PERSONNEL DOOR (SQ. FT) 126 (SQ. FT) INSULATED PANEL 0 0 0 0 0 (SQ. FT) **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 **OUTSIDE AIR FILM** 4' FACE BRICK 0.43 0.91 AIR SPACE 3. FACE BRICK 5.00 RIGID INSULATION 4. AIR SPACE 2.02 8" L.W. CONC. BLOCK 2" INSULATION 8"CMU INSIDE AIR FILM 0.68 9.21 TOTAL R-WALL = 0.109 U=1/R R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 SHEET ROOFING 2" RIGID INSULATION 6.68 3. BUILT-UP ROOF 0.00 METAL DECK 4. 2" INSULATION 5 METAL DECKING 6 INSIDE AIR FILM 0.68 7. TOTAL R-ROOF = 7.87 0.127 U=1/R1.61 R-GLASS DOUBLE PANE **GLASS TYPE:** 0.67 SLAB TYPE FLOOR: CONCRETE R-BASEM. 0.00 NONE **BASEMENT TYPE:** R-PANEL 4.20 NONE INSULATED PANEL: 2.56 R-PDOOR METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 0.000 X CFM / SQ.FT. = TIGHT WALL H/M/L (SQ.FT.) 417 X CFM / SQ.FT. 0.115 = М 3626 AVG. WALL H/M/L (SQ.FT.) 0 0.000 = X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 = DOOR OPENINGS / HR - SINGLE DOOR 21 1.385 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR = 438 TOTAL INFILTRATION (CFM) = 0.238 0 X PANEL "U" **UA PANEL** = PANEL AREA 0 = X DOOR 'U' 49 0.391 = 126 **UA PDOOR** = PDOOR AREA 376 X WALL "U" 0.109 = = WALL AREA 3,464 **UA WALL** 601 X ROOF 'U' 0.127 = ROOF AREA 4,728 **UA ROOF** 22 X GLASS "U" 0.621 = GLASS AREA 36 **UA GLASS** 174 0.670 X SLF **UA SLAB** = SLAB PERIM 259 0 X BASE. "U" 0.000 = 0 =B-WALL AREA UA BASEM. 453 438 X A. T. F. 1.035 = CFM INFILTRATION = 1,675 TOTAL UA (BTU/HR°F)

E M C ENGINEERS, INC. DATE: 16-Feb-93 BY: TMB PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 JOB: CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 1350BLZ3 FILE: **LOCATION: FT LEONARD WOOD BUILDING HEATING LOAD CALCULATION SHEET** 1350 BLDG NAME: RESERVE CENTER BLDG NO: **CLASSROOMS BLDG FUNCTION:** # FLOORS 4,357 FLOOR AREA: (SQ. FT) 120 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL NORTH SOUTH **EAST** 770 1,680 0 WALLS, GROSS (SQ. FT) 0 910 70 55 0 15 0 (SQ. FT) GLASS 42 0 21 0 21 PERSONNEL DOOR (SQ. FT) 0 0 0 (SQ. FT) 0 0 INSULATED PANEL 0 734 1,568 0 834 (SQ. FT) WALLS, NET (SQ. FT) 4,357 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 0 PERSONNEL DOOR 42 (SQ. FT) (SQ. FT) **INSULATED PANEL** 0 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.17 4' FACE BRICK 0.43 2. 0.91 3. AIR SPACE FACE BRICK 5.00 **RIGID INSULATION** AIR SPACE 8" L.W. CONC. BLOCK 2.02 5. 2" INSULATION 8"CMU INSIDE AIR FILM 0.68 9.21 TOTAL R-WALL = 0.109 U=1/RCOMPONENTS **R-VALUE** ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 OUTSIDE AIR FILM 0.34 SHEET ROOFING 2" RIGID INSULATION 6.68 BUILT-UP ROOF 1.00 4. AIR SPACE 2" INSULATION 30.00 **BATT INSULATION** 5. METAL DECKING 1.79 **ACOUSTIC TILE** 6. INSIDE AIR FILM 0.68 TOTAL R-ROOF = 40.65 0.025 U=1/R1.61 R-GLASS DOUBLE PANE **GLASS TYPE:** 0.67 SLF SLAB TYPE FLOOR: CONCRETE 0.00 R-BASEM. NONE **BASEMENT TYPE:** R-PANEL 4.20 NONE **INSULATED PANEL:** R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0 0.000 = X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 193 X CFM / SQ.FT. 0.115 М AVG. WALL H/M/L (SQ.FT.) 0 0.000 LEAKY WALL H/M/L (SQ.FT.) X CFM / SQ.FT. 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR 21 X CFM /OPENING /HR 1.385 = 15 DOOR OPENINGS / HR - DOUBLE DOORS 214 TOTAL INFILTRATION (CFM) -0 0.238 X PANEL 'U' 0 = = PANEL AREA **UA PANEL** 16 X DOOR 'U' 0.391 = = PDOOR AREA 42 **UA PDOOR** 170 X WALL 'U' 0.109 = 1,568 = WALL AREA **UA WALL** X ROOF 'U' 107 0.025 = **UA ROOF** = ROOF AREA 4,357 43 X GLASS 'U' 0.621 = GLASS AREA 70 **UA GLASS** 80 0.670 **UA SLAB** = SLAB PERIM. 120 X SLF X BASE. "U" 0 0.000 UA BASEM. =B-WALL AREA 0 222 1.035 X A. T. F. CFM 214 INFILTRATION 639 TOTAL UA (BTU/HR°F)

DDO IDOT. PEAC		S, INC.					DATE:	16-Feb
		PANSION FEAS		IDY		-	BY:	
CLIENT CONTRAC	T NO.: DA	CA 41-92-C-	-0098				JOB:	3204.
CLIENT PROJ. EN	G.: DOUG	CAGE					CHK:	
LOCATION: FT LE	ONARD W	/OOD					FILE:	1350E
	BUILD	ING HEATIN	NG LOAD	CALCULA	ATION S	HEET		
BLDG NO:	1350	BLDG NAME:	RESERVE CI	ENTER				
BLDG FUNCTION:		ASSEMBLY HA	LL					
FLOOR AREA: (SQ.	FT)	2,232	-				# FLOORS	
SLAB PERIMETER: ((FT)	37	_					
I. AREAS: ([] FIEL	D VERIFIED	ELEVATION PLA	ANS)					i
			· NORTH	SOUTH	EAST	WEST	TOTAL	
WALLS, GROSS		(SQ. FT)	186	186	629	0	1,001	
GLASS		(SQ. FT)	0	0	42	0	42	
PERSONNEL DOOR		(SQ. FT)	0	0	0	0	0	
INSULATED PANEL WALLS, NET		(SQ. FT) (SQ. FT)	186	186	581	0	953	
ROOF AREA (OR CE	II ING ARE					(SQ. FT)	2,232	
INSULATED PANEL		(SQ. FT)	0	PERSONNEL	DOOR	(SQ. FT)	42	
BASEMENT WALLS		(SQ. FT)	0	0	0	0	0	
II. CONSTRUCTION			L, ROOF. WIN	IDOW, DOOR	TYPES)			
WALLS: (SKETCH C	CROSS SEC	CTION OF WALL)	, ,			COMPONEN	ITS	R-VAL
THE TOTAL POST						OUTSIDE A		
	K					4' FACE BR		
	1, 1	4	FI'FACE BP	ICIC		AIR SPACE		
			AIR SPACE			RIGID INSU		
	ا د دا		Z" INSULAT			8" L.W. CO!	NU. BLUCK	
			R"CMU	•	6. 7.	INSIDE AIR	FILM	
	1	4	5 6/110		7.	TOTAL R-		
							U=1/R	0
BOOK 1517-511-5	BOSS SEC	TION OF BOOK				COMPONEN	ITO	- 1/A1
HOOF: (SKETCH C	MU33 3EU	HUN OF HOUF						
ROOF: (SKETCH C	HU35 5EC	HON OF HOOF)			1.	OUTSIDE A	IR FILM	
HOOF: (SKETCH C	HU55 5EC	HON OF HOOF)			1. 2.	OUTSIDE A	AIR FILM OFING	R-VAL
HOOF: (SKETCH C	HU55 5EC	110N OF HOOF)	P	o Root	1. 2. 3.	OUTSIDE A SHEET ROO 2' RIGID IN	AIR FILM OFING SULATION	
HOOF: (SKETCH C		ION OF HOOF)	- BUILT- UI		1. 2. 3. 4.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE	NR FILM OFING SULATION	
HOOF: (SKETCH C	,,,,,,,,,	TION OF HOOF)	-2" INSUL	LICHTA	1. 2. 3. 4. 5.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU	NIR FILM OFING SULATION LATION	3
HOOF: (SKETCH C	JJJJJJJ	TION OF HOOF)		LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2" RIGID IN AIR SPACE BATT INSU ACOUSTIC	NIR FILM OFING SULATION LATION TILE	3
HOOF: (SKETCH C	NOSS SEC	TION OF HOOF)	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	NIR FILM OFING SULATION LATION TILE	3
HOOF: (SKETCH C	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	HON OF HOOF)	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2" RIGID IN AIR SPACE BATT INSU ACOUSTIC	NIR FILM OFING SULATION LATION TILE	3
HOOF: (SKETCH C	<u> </u>	TION OF HOOF)	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	IR FILM OFING SULATION LATION TILE I FILM -ROOF =	3
GLASS TYPE:		DOUBLE PANE	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R	3
GLASS TYPE: SLAB TYPE FLOOR	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	DOUBLE PANE	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF	3
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE:	:	DOUBLE PANE CONCRETE NONE	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM	3
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	DOUBLE PANE CONCRETE NONE NONE	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOR	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	DOUBLE PANE CONCRETE NONE	-2" INSUL	LICHTA	1. 2. 3. 4. 5. 6.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOR	.; B TYPE:	DOUBLE PANE CONCRETE NONE NONE	-2" INSUL	ATION DECKING	1. 2. 3. 4. 5. 6. 7.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R-	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4 0
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L	:: :: :: :: (SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL	-2" INSUL -METAL D	ATION OF CHING X CFM / SC	1. 2. 3. 4. 5. 6. 7.	OUTSIDE A SHEET ROO 2º RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R-	IR FILM OFING SULATION LATION TILE I FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOO! III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L	:: RTYPE: (SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE	-2" INSUL	X CFM / SC X CFM / SC	1. 2. 3. 4. 5. 6. 7.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R-	IR FILM OFING SULATION LATION TILE IFILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4 0
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L	:: RTYPE: (SQ.FT.) (SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL	-2" INSUL -METAL D	X CFM / SC X CFM / SC X CFM / SC	1. 2. 3. 4. 5. 6. 7. 7. D.FT. D.FT.	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4 0
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L DOOR OPENINGS	:: R TYPE: .(SQ.FT.) (SQ.FT.) L(SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR	-2" INSUL -METAL D	X CFM / SC X CFM / SC X CFM / SC X CFM / SC	1. 2. 3. 4. 5. 6. 7. 2.FT. 2.FT. 2.FT.	OUTSIDE A SHEET ROO 2º RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 1.600	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4 0
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L	:: R TYPE: .(SQ.FT.) (SQ.FT.) L(SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR	-2" INSUL -METAL D	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP	1. 2. 3. 4. 5. 6. 7. 7. D.FT. D.FT. ENING /HF	OUTSIDE A SHEET ROO 2º RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 1.600 1.385	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L DOOR OPENINGS DOOR OPENINGS	:: R TYPE: .(SQ.FT.) (SQ.FT.) _(SQ.FT.) / HR - SIN / HR - DOI	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS	-2" INSUL- METAL L	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. 7. D.FT. D.FT. D.FT. ENING /HF	OUTSIDE A SHEET ROO 2º RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM)	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L DOOR OPENINGS DOOR OPENINGS	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (HR - SIN) (HR - DOI	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA	-2" INSUL METAL L 1001	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. 7. D.FT. D.FT. D.FT. ENING /HF ENING /HF LTRATION K PANEL 'L	OUTSIDE A SHEET ROO 2º RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM)	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L DOOR OPENINGS DOOR OPENINGS UA P UA P	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (HR - SIN / HR - DOI	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA = PDOOR AREA	-2" INSUL- METAL D 1001 25	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. D.FT. D.FT. D.FT. ENING /HF ENING /HF LTRATION K PANEL 'L K DOOR 'U	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM) J* 0.238	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L DOOR OPENINGS DOOR OPENINGS UA P UA P UA W	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (HR - SIN / HR - DOI ANEL DOOR	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA = PDOOR AREA = WALL AREA	-2" INSUL- METAL D 1001 25 4 42 953	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. D.FT. D.FT. ENING /HF ENING /HF LTRATION K PANEL 'U' X WALL 'U'	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM) J* 0.238	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L DOOR OPENINGS DOOR OPENINGS UA P UA P UA W UA R	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) / HR - SIN / HR - DOI	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA = PDOOR AREA = WALL AREA = ROOF AREA	2" INSUL- METAL D 1001 25 4 42 953 2,232	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. D.FT. D.FT. ENING /HF ENING /HF LTRATION K PANEL 'L' X DOOR 'U X WALL 'U' X ROOF 'U'	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM) J* 0.238 0.391 0.109	IR FILM OFING SULATION LATION TILE FILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L DOOR OPENINGS DOOR OPENINGS UA P UA P UA W UA R UA G	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (HR - SIN / HR - DOI ANEL DOOR VALL IOOF	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA = PDOOR AREA = WALL AREA = ROOF AREA = GLASS AREA	2" INSUL METAL D 1001 25 0 4 42 953 2,232 6	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. D.FT. D.FT. D.FT. ENING /HF LTRATION K PANEL 'L' X DOOR 'U X WALL 'U' X ROOF 'U' X GLASS 'L'	0.000 0.115 0.000 0.115 0.000 0.115 0.000 0.115 0.000 0.109 0.0238	IR FILM OFING SULATION LATION TILE IFILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L DOOR OPENINGS DOOR OPENINGS UA P UA P UA W UA R UA G UA S	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (HR - SIN / HR - DOI ANEL DOOR VALL IOOF BLASS BLAB	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA = PDOOR AREA = WALL AREA = ROOF AREA = GLASS AREA = SLAB PERIM.	2" INSUL- METAL D 1001 25 4 42 953 2,232 6 37	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. D.FT. D.FT. D.FT. ENING /HF ENING /HF LTRATION K PANEL 'L' X DOOR 'U X WALL 'U' X ROOF 'U' X GLASS 'L	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM) 0.238 0.091 0.109 0.0025 J' 0.621 0.670	IR FILM OFING SULATION LATION TILE IFILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4
GLASS TYPE: SLAB TYPE FLOOR BASEMENT TYPE: INSULATED PANEL PERSONNEL DOOF III. INFILTRATION: TIGHT WALL H/M/L AVG. WALL H/M/L LEAKY WALL H/M/L DOOR OPENINGS DOOR OPENINGS UA P UA P UA W UA R UA G UA S UA B	SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (SQ.FT.) (HR - SIN / HR - DOI ANEL DOOR VALL IOOF	DOUBLE PANE CONCRETE NONE NONE METAL M GLE DOOR UBLE DOORS = PANEL AREA = PDOOR AREA = WALL AREA = ROOF AREA = GLASS AREA	2" INSUL- METAL D 1001 25 4 42 953 2,232 6 37	X CFM / SC X CFM / SC X CFM / SC X CFM / OP X CFM / OP TOTAL INFII	1. 2. 3. 4. 5. 6. 7. D.FT. D.FT. D.FT. ENING /HF LTRATION K PANEL 'L' X DOOR 'U X WALL 'U' X ROOF 'U' X GLASS 'L'	OUTSIDE A SHEET ROO 2' RIGID IN AIR SPACE BATT INSU ACOUSTIC INSIDE AIR TOTAL R- 0.000 0.115 0.000 3.1.600 3.1.385 (CFM) 0.238 0.091 0.109 0.0025 J' 0.621 0.670	IR FILM OFING SULATION LATION TILE IFILM -ROOF = U=1/R R-GLASS SLF R-BASEM R-PANEL R-PDOOF	4 0

EMC ENGINEERS, INC. DATE: 16-Feb-93 **TMB** BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204.000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 1350BLZ5 LOCATION: FT LEONARD WOOD FILE: **BUILDING HEATING LOAD CALCULATION SHEET** 1350 BLDG NAME: RESERVE CENTER BLDG NO: **BLDG FUNCTION: ADMINISTRATION** # FLOORS 5,712 FLOOR AREA: (SQ. FT) 169 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL SOUTH EAST NORTH 336 910 1,120 0 2,366 (SQ. FT) WALLS, GROSS 0 248 102 146 (SQ. FT) 0 GLASS 0 42 PERSONNEL DOOR 0 21 21 (SQ. FT) 0 0 0 0 (SQ. FT) 0 INSULATED PANEL 953 0 2,076 336 787 WALLS, NET (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) <u>5,712</u> (SQ. FT) 42 0 PERSONNEL DOOR (SQ. FT) (SQ. FT) INSULATED PANEL 0 0 O 0 0 (SQ. FT) **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.17 4" FACE BRICK 0.43 0.91 3. AIR SPACE 4" FACE BPICK 4. **RIGID INSULATION** 5.00 AIR SPACE 8" L.W. CONC. BLOCK 2.02 2" INSULATION 8"CMU 0.68 INSIDE AIR FILM TOTAL R-WALL = 9.21 0.109 U=1/R**R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM SHEET ROOFING 0.34 2" RIGID INSULATION 6.68 BUILT-UP ROME AIR SPACE 1.00 12" INSULATION 30.00 **BATT INSULATION** 5. METAL DECKING 1.79 **ACOUSTIC TILE** 6. 0.68 INSIDE AIR FILM TOTAL R-ROOF = 40.65 0.025 U=1/RR-GLASS 1.61 DOUBLE PANE GLASS TYPE: 0.67 SLF SLAB TYPE FLOOR: CONCRETE 0.00 R-BASEM **BASEMENT TYPE:** NONE 4.20 R-PANEL NONE **INSULATED PANEL:** R-PDOOR 2.56 PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0 0.000 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 272 0.115 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 2366 n X CFM / SQ.FT. 0.000 = LEAKY WALL H/M/L (SQ.FT.) 24 DOOR OPENINGS / HR - SINGLE DOOR X CFM /OPENING /HR 1.600 = 0 1.385 X CFM /OPENING /HR DOOR OPENINGS / HR - DOUBLE DOORS 296 TOTAL INFILTRATION (CFM) 0 X PANEL "U" 0.238 **UA PANEL** = PANEL AREA 0 16 X DOOR 'U' 0.391 = PDOOR AREA 42 **UA PDOOR** 225 X WALL 'U' 0.109 2,076 = WALL AREA **UA WALL** 141 0.025 X ROOF 'U' **UA ROOF** = ROOF AREA 5,712 154 0.621 X GLASS "U" 248 = GLASS AREA **UA GLASS** 113 = SLAB PERIM. 169 X SLF 0.670 = **UA SLAB** 0 =B-WALL AREA 0 X BASE. "U" 0.000 = UA BASEM. 306 X A. T. F. 1.035 **INFILTRATION** CFM 296 TOTAL UA (BTU/HR°F) 956

3204 -- 000 EMC NO:

ZONE 16 - Feb - 93 TMB CEL 1350 Z1 1350 DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activit		Typical	Sensible	Г	TOT Sen. TOT. La	TOT. Lat
Š	People	TVDB	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
	4	7	Walking, 3mph, light machine work	Factory	375	625	1,500	2,500
TOTAL	4	L				TOTAL	1,500	1,500 2,500

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Focture			
Š	Fixtures	Type	Description	Watts/Fixture Total Wattage	Total Wattage
-	7	9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	588
	9	8	8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	1,008
TOTAL	13			TOTAL	1,596

			Peak Value for Internal Gains				
Zone	No of	Fauin.			Heat Gain		Total
Š	Equipmen	TVD	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
	-	101	I Dishwasher (hood type chemical sanitizing), per 100 dish/hi	1 510	41%	510	1,741
	-	83	Free	1,340	40%	1,340	4,573
	-	8	Griddle/arill (large) per sq.ft. of cooking surface (4.6 to 11.8	2,696	10%	2,696	9,201
		87	Microwave oven (Heavy duty commercial)	2,628	100%	2,628	696'8
	-	81	Food Warmer (infrared buld), per lamp	249	100%	249	850
	2	97		1,304		2,608	8,901
-	-	4		624	105%	624	2,130
	-	98	8	1,089	251%	1,089	3,717
		35	Fre	372		372	1,270
	8	88		220	40%	440	1,502
				TOTAL	59%	12,556	42,854

3204-000	16-Feb-93
EMC NO.:	DATE:

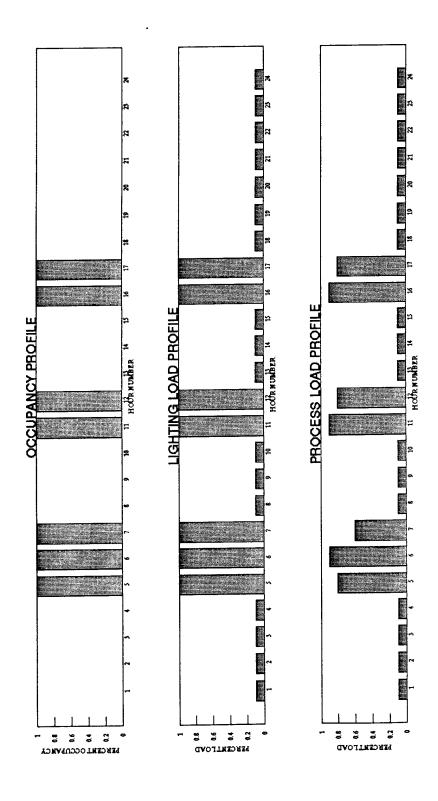
TMB

1350Z1

Prepared By: Checked By: File: Blog: Zone:

1350

BI DG	BLDG	TYPE OF										Ī	OUR	HOUR NUMBER	BER										
TYPE	FUNCTION		F	2	9	4	2	9	7	8	6	9	F	12	13	4	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	16	171	18	161	, O	115	2 2	23 24
2	Kitchen	OCCUPANCY		Г		Г	F	F	F	H		-	-	F	\vdash	H		F	=	H	H	-	H	\vdash	
		LIGHTING	0.1 0.1 0.1 0.1	0.1	0.1	0.1	-	-	-	0.1	0.1	1 0.1 0.1 0.1 1 1 0.1 0.1	-	1	1.1	1.	1 0.1 0.1 1 1	-	۲	1 0.1 0.1 0.1 0.1 0.1 0.1	0	-	1	1 0	.1 0.1
		PROCESS	0.1	0.1	0.1	1 0.1 0.8	0.8	60	9.0	0.1	0.1	0.9 0.6 0.1 0.1 0.1 0.9 0.8 0.1 0.1 0.1) 6(18 (11	7.1	0.9 0.8 0.1 0.1 0.1 0.1 0.1	8	0.1	1.0	٠.	1.0	0	1.



3204 -- 000 16-Feb-93 EMC NO.:

TMB CEL 135022 1350

Date: Prepared by: Checked by: File: Bldg:

N

ZONE

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activity		Typical	Sensible		TOT Sen. TOT. Lat	TOT. Lat
ŝ	People	Type	Degree of Activity	Application	(BIU/H)	(BIO/H)	(B) U/H) (B) U/H	(n/01a)
2	9	7	Walking, 3mph, light machine work	Factory	375	625	1,125	1,875
TOTAL	3					TOTAL	1,125	1,875

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture	Description	Watts/Fixture	Total Wattade
. Z	57	9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)		
	9	85	62 Exit Light	50	09
TOTAL	9			TOTAL	4,848

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		
Š	Eauipmen	- A	Description	Average Wattage	to Space (%)	to Space (%) Total Wattage	9
		45	Micro Fiche Machine	250	20%	250	853
	-	9	8	1,570	20%	1,570	5,358
				TOTAL	24%	1,820	6,212

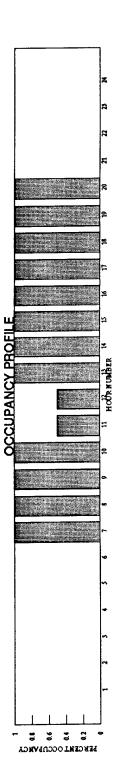
3204 -000 16 -Feb-93

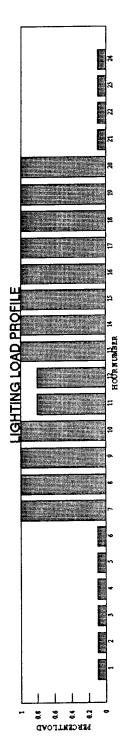
TIMB CEL 135022 EMC NO.: DATE: PREPARED BY: CHECKED BY:

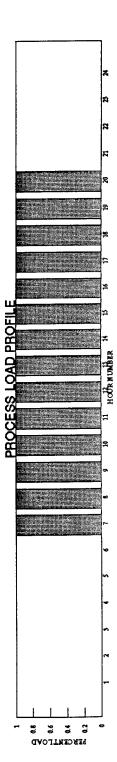
FILE: BLDG: ZONE:

1350 2

***************************************												İ													
BLDG	BCDG	TYPE OF										오	URN	HOUR NUMBER	ER										
TYPE	FUNCTION	PROFILE	-	2	3	4	2	9	7	8	9	10 1	-	2 13	14	15	16	17	14 15 16 17 18 19 20 21 22	6	ଯ	21	8	23 24	24
3	Administration	OCCUPANCY			_		Н	H	-	-	-	10	0.5 0.5		-	-	-	-	F	-	=		\vdash		Г
		LIGHTING	0.1	0.1	0.1 0.1 0.1 0.1 0.1	0.1	0.1	0.1	1	1	1	1 0.8	8.0 8	. 6	١ ا	1	-	-	-	-	-	1.0	0.1	0.1	0.1
		PROCESS					\dashv	\dashv	-	1	1	1	-	1	1	1	_	1	-	-	-		_		







3204-000

က

ZONE

17 – Feb – 93 TMB CEL 1350 Z3 1350 EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

	Typical	Sensible	Latent	TOT Sen. TOT. La	TOT. Lat
Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H)	(BTU/H)
Seated very light work (writing)	Offices, hotels, apts	245	155	11,760	7,440
			TOTAL	11,760	7,440
114 1 1 11	Activity	Activity Office	I Activity Application (BTU/H	Typical Sensible Latent Application (BTU/H) (BTU/H)	Typical Sensible Latent Application (BTU/H) (BTU/H)

. No. Zone

TOTAL

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			
Š	Fixtures	Туре	Description	Watts/Fixture	Total Wattage
3	13		6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	1,092
	88	_	Fluorescent, 3 - 34w lamps, 16w ballast (2x4 ft. fixture)	118	6,844
TOTAL	71			TOTAL	7,936

			Peak Value for Internal Gains				
Zone	No. of Equip	Equip.	Description	Average Wattage	Heat Gain	Heat Gain Total Wattade	Total (BTU)
3	- Lyunburgi	٦,	Pop Machine	321	35%	321	1,096
				TOTAL	32%	321	1,096

3204-000	47 Fab
EMC NO.:	DATE:

17-Feb-93 TMB DATE: PREPARED BY: CHECKED BY:

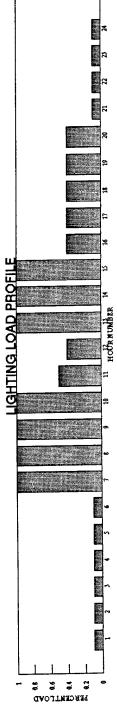
135023 띪

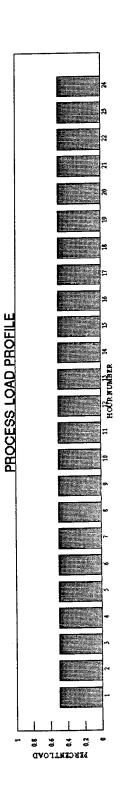
1350 3

FILE: BLDG: ZONE:

5	2	מס ממעד										ב	2	HOUR WINDER	ä									
BLDG	פרופ	בי בי					-	-				2	5	E					-					-
TYPE	FUNCTION	PROFILE	-	2	၉	4	2	9	7	80	9 10 11 12	1	12	13	14	15	9	12	13 14 15 16 17 18 19 20 21 22 23	6	8	21	N N	3 24
3	Administration	OCCUPANCY		\vdash		-	H	-	-	-	-	103	02	_	1	-	02	02	02	02 0	0.2		\vdash	Н
•		LIGHTING	0.1		1.0	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 1 1 1 0.5 0.4 1 1 1 0.4 0.4 0.4 0.4 0.4 0.4 0.1 0.1 0.1 0.1 0.1	1.	<u>-</u>	-	-	<u> </u>	1 0.5	0.4	-	1	1	9.0	0.4	0.4	0.4 () 4 C	0.1	1.	0.1 0.1
		PROCESS	0.5	0.5	0.5	0.5	3.5	5.0	5	5 0	5 0.5	5 0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5 (0.5 () <u>5</u> C	5	50







Zone No.

TOTAL

3204-000 16-Feb-93 EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

BWL B

ZONE:

CEL 135024 1350

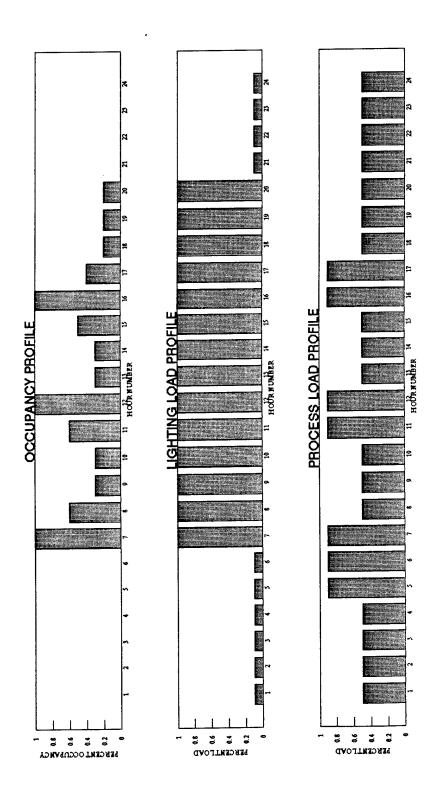
		Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
No of	Activity		Typical	Sensible	Latent	TOT Sen. TOT. L	TOT. Lat
People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
40	4		Offices, hotels, apts	250	200		8,000
4					TOTAL	10,000	8,000

			Peak Wattage Value for Lights		
Zone	No. of Forture	Fixture			
Š	Fixtures Type	Type	Description	Watts/Fixture Total Wattage	Total Wattage
4		9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	168
	12	42	42 Metal Halide - 175w with 40w ballast	215	2,580
	၉	62	62 Exit Light	8	8
TOTAL	17			TOTAL	2,808

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		Total
Š	No. Equipmen Type	V	Description	Average Wattage to Space (%) Total Wattage	to Space (%)	Total Wattage	(BTU)
4	9	116	16 Pop Machine	326	20%	8/6	3,338
	-	24	24 Coffee Maker	1,500	%0E	-	5,120
	-	11	Coffee brewing Um (large), per quart capacity	624	105%	624	2,130
			The state of the s				
				TOTAL	42%	3,102	10,587

3204-000	16-Feb-93	TMB	띪	135024	1350	4
EMC NO.:	DATE:	PREPARED BY:	CHECKED BY:	FILE:	BLDG:	ZONE:

BLDG	BLDG	TYPE OF										Ĭ	HOUR NUMBER	NO.	BEH										
TYPE	FUNCTION	PROFILE	-	2	၉	4	5	9	7	8	6	10	11 12	2 13	3	4 15	3	16 17 18 19 20 21 22	8	19	ଷ	21	8	ಬ	24
3	Administration	OCCUPANCY		_					Ŧ	9.0	0.3	9.0 8.0	9.	1 0.3	0	3 0.5		0.4	02	02	02				
		LIGHTING	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	-	-	-	-	-		_	_	-	-	0.	0.1	0.1	0.1
		PROCESS	0.5	5 05	0.5	0.5	60 60	60	60	0.5	20 20 20 60		0 6	0	09 09 05 05 05 09 09 05 05 05 05 05 05	5 0	2 0.5	0.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5



3204-000 16-Feb-93

ZONE:

TOT. Lat (BTU/H)

TOT Sen. | (BTU/H) 12,500

10,000

12,500 10,000

3204-000	16~Feb-93	J.BY: TAME	BY: CEI	13502	1350
EMC NO.:	DATE:	PREPARED BY	CHECKED BY	FILE:	BI DG:

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			
ŝ	Fixtures Type	Type	Description	Watts/Fixture	Total Wattage
5	68	8	8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	14,952
	-	62	62 Exit Light	20	20
TOTAL	8			TOTAL	14,972

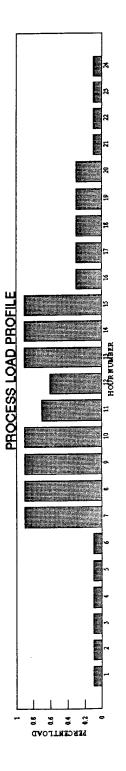
			Peak Value for Internal Gains				
Zone	No of	Fauip			Heat Gain		Total
Š	Equipmen	Z V	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
5	4	12	Typewriter	100	10%	400	1,365
		45	Micro Fiche Machine	250	20%	250	853
	9	49	49 Radio	71	%01	426	1,454
	-	46	46 Microwave Oven	900	%59	009	2,048
	-	24	24 Coffee Maker	1,500	30%	1,500	5,120
	-	116	116 Pop Machine	326	%07	326	1,113
	4	3	3 Microcomputer	350	91%	1,400	4,778
	4	5	5 Printer (laser)	870	34%	3,480	11,877
	2		10 Copy Machine	1,570	20%	3,140	10,717
				TOTAL	37%	11,522	39,325

3204-000	16-Feb-93	TMB	CEL
EMC NO.:	DATE:	PREPARED BY:	CHECKED BY:

135025 FILE: BLDG: ZONE:

1350

	24		0.1	0.1					
	23		0.1	0.1					
	22		0.1	0.1					
	21		0.1	0.1					7
	8	02	0.5	03			×		×
	19	02	0.5	0.3			ล		2
	18	02	0.5	80 80 80 60 60			zi		22
	17	02	0.5	0.3					×
	16	02	0.5	0.3			Z.		
	15	-	1	60			8,		2
<u>~</u>	14	-	-	60			61		e e
MBE!	13	F	-	60			2 2		=
Ĭ N N	12	0.5	0.5	9.0			tı		1
HOUR NUMBER	=	0.8		0.7			\$1 \$		16
-	9	1	-	60	ш		<u> </u>		2
	6	1	-	60	ZOE		, Of		=
	8	-	-	6.0	γ P		AD [
	7	F	1	60	OCCUPANCY PROFI		19 11 нодъжимвек 14 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16		Hodde wradara
	9		0.1	0.1	ang 🖪				=
	5		0.1	0.1	Ö		≥ <u>1</u>		2
	4		0.1	0.1			_		
	၉		0.1	0.1					
	2		0.1	0.1			-		1
	F		0.1	0.1					,
light Section	Œ	Ş							
PE	PROFILE	:UPA	LIGHTING	CES			r e		
F	五	8	-FG	P.B.O			-		
(5	NO	ation					<u> </u>		
BLDG	FUNCTION	3 Administration OCCUPANCY					2		2
	FU	Adm					-		1
2	TYPE	က				1 1 1	<u> </u>]
BLDG	Σ				YPANCY 2 S	DOOTNIDAIN R R R R	-	PERCENTLOAD 2 2 2 2 2	
		L	-						



01 Card - Job Information

Project: EEAP STUDY, EXPANSION OF EMCS

Location: FT. LEONARD WOOD, MO

Client: US ARMY

Program User: E M C ENGINEERS, INC.

	Summer Clearness Number	atic Inform Winter Clearness Number .97	Summer Design	Summer Design	Winter Design Dry Bulb 3	Building Orientation	Summer Ground Reflect	Winter Ground Reflect
--	-------------------------------	---	------------------	------------------	-----------------------------------	-------------------------	-----------------------------	-----------------------------

CARD 09 Load Simulation Periods													
1st Month	Last Month	Peak			1st Month								
Cooling	Cooling	Cooling	Summer	Summer	Daylight	Daylight							
Simulation	Simulation	Load Hr	Period	Period	Savings	Savings							
MAY	SEP		JUN	SEP	APR	OCT							

CARD 10 Load Simulation Parameters											
Cooling	Reating		Airflow	Airflow	Room	Put Wall					
Load	Load	Ventilation	Input	Output	Circulation	RA Load					
Method	Method	Method	Units	Units	Rate	to Room					
	TETD-TA1	OADB	ACTUAL	ACTUAL	MED-RCR	NO					

CARD 1	1 Energy S Last Month	imulation Par Level	ameters		Building
Energy	Energy	of	Holiday	Calendar	Floor
Simulation	Simulation	Calculation	Code	Code	Area
JAN	DEC	ROOM	1978	1978	17677

_____Load Section Alternative #1 -----

---- Load Alternative ----

Number Description

1 BLDG 1350 BASERUN FT LEONARD WOOD

	Zone	eral Room Parameters			Q	Plenum	Acoustic Ceiling	Floor	Duplicate Floors	Duplicate Rooms per	
m	Reference	Room	Floor	Floor			Resistance	Height	Multiplier	Zone	
ber	Number	Descrip	Length	Width	Type 2	0		17			
	1	KITCHEN	36	18	2	0		14			
	2	WAREHOUSE SUPPLY	131	36.092	_	0		14			
	3	CLASSROOMS	67.031	65	2	0	•	17			
	4	ASSEMBLY HALL	60.324	37	2			14			
	5	ADMINISTRATION	87.677	65	2	0					

CA	RD 21 The	rmostat	Parameters -			Heating	Heating	T'stat	Mass /	Carpet
	Cooling	Room	Cooling	Cooling	Heating	-	T'stat	Location	No. Hrs	On
Room	Room	Design	T'stat	T'stat	Room	T'stat	=		Average	
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint			LIGHT30	
м	75			CLG75SUM	70		HTG70WNT	ROOM	FIGHIO	,,,
	,,									
1					67		HTG67WNT			
2										
3										
4										
5										

CA	RD 22	Roof Param	eters						
		Roof						Roof	Roof
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof Direction		
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	1110	.67
м	1				.025	50			.01
1	1	YES							
2	1	YES			.127				
3	1	YES							
4	1	YES							
5	1	YES							

					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall		Wall	Reflectance
Number	Number	Length	Height	U-Value	Туре	Direction	Tilt	-	Multiplier
M	1	_		.109	89			.68	
1	1	10	5.7			0			
1	2	10	5.7			180			
1	3	65.1	10	.119		270			
2	1	187.6	10	.115		0			
2	2	67.2	10			180			
2	3	60.2	10	.129					
2	4	60.2	10	.129		270			
3	1	93.1	10	.115		180			
3	2	79.1	10	.116		270			

CARD 24 Wall Parameters												
CA	RD 24	Mall Pare	merers		Wall				Ground			
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance			
Number	Number	Length	Height	U-Value	туре	Direction	Tilt	Alpha	Multiplier			
4	1	18.6	10			0						
4	2	18.6	10			180						
4	3	67.1	10	.127		90			•			
5	1	33.6	10			0						
5	2	93.1	10	.115		180						
5	3	114.1	10	.114		90						

CAF	D 25 V	Wall/Glass	Paramete	ers			External	Tetornel	Percent		Inside
				Pct Glass				Shading	Solar to	Visible	Visible
Room	Wall	Glass	Glass	or No. of		Shading	Shading	Type		Transmittance	Reflectance
Number	Number	Length	Width	Windows	U-Value		Туре	Type	NOUT 1.20	.8	
м	1				.62	.58					
1	3	3	2	1							
2	1	6	2	1							
2	3	6	2	1							
2	4	6	2	1				3			
3	1	11	5	1				3			
3	2	5	3	1							
4	3	3	2	1				_			
5	2	12.75	8	1				3			
5	3	18.25	8	1				3			

CA	RD 26 Sc	hedules			Reheat	Cooling	Heating	Auxiliary	Room Exhaust	Daylighting Controls			
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	CONCIOLE			
	•	L-1350Z1	AVAIL	AVAIL		AVAIL	AVAIL						
1						AVAIL	AVAIL						
2	P-1350Z2	L-1350Z2	AVAIL	AVAIL			**** TT						
3	P-1350Z3	L-1350Z3	AVAIL	AVAIL		AVAIL	AVAIL						
4	P-1350Z4	L-135024	AVAIL	AVAIL		AVAIL	AVAIL						
•	•			AVAIL		AVAIL	AVAIL						
5	P-1350Z5	L-1350Z5	WANTT	MANTE									

CA	RD 27	People an	id Lights -				Lighting		Percent	Daylig	hting
Room Number M	People Value	People Units PEOPLE	People Sensible	-	Lighting Value	Lighting Units WATTS	Fixture Type RECFL-NV	Ballast Factor	Lights to Ret. Air	Reference Point 1	Reference Point 2
1	4		375	625	1596						
2	3		375	625	4848						
3	48		245	155	7936						
4	40		250	200	2808		INCAND				
5	50		250	200	14972						

TRACE 600 input file D:\3204\TRACE\1350.TM by Trane Customer Direct Service Network

Alternative #1

Page #4

CA	RD 28 M1 Misc	scellaneous Equipmen	Energy	Energy		Energy	Percent of Load	Percent Misc. Load	Percent Misc. Sens	Radiant	Optiona
OOE	Equipment	Equipment	Consump	Consump	Schedule Code	Meter Code	Sensible	***	to Ret. Air	Fraction	Air Pat
umber	Number	Descrip	Value	Units	Code	ELEC					SAME-R
	1	PROCESS EQUIP		WATTS	E-1350Z1	222		5			
	1		12556		E-1350Z2			24			
	1		1820		E-1350Z3		•	35			
	1		321		E-1350Z4			42			
	1		3102		E-135025			37			

CA	RD 29 1	Room Airflow	vs		Infiltration							
		Venti	lation	 ting		InIll ling		ting	Reheat	Minimum		
Room		ling Units	Value	Units	Value	Units	Value	Units	Value	Units		
Number	Asine	CFM	,,,,,,	CFM		CFM		CFM				
H 1	CFM		3036				90					
2							438					
3	600		600		214		214 150					
4	660		660				296					
5	380		380		296							

		Ma	in			Auxi			Room E	whougt
·	000	ling	Heat	ting	Coo	ling	Hea	ting		
noom	Value	Units	Value	Units	Value	Units	Value	Units	Value	Unite
		CFM		CFM						
	0		4685							
	0		1480							
	3080		3080							
	0		3720							
	3800		3800							

Room		tition Para Partition		Partition	Const	Temp	Cooling	-	Adjacent
_	Number	Length	Height	ប្-Value	Type	Flag	Temp	Temp	Room No
Number	KOMPAT	22.03	-		101	CONSTANT		•	
M	1								
2	1	100	57						
3	1	100	75.2						
4	1	100	16.1						
5	1	100	104.9						

PAGE 1

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

	ELEC On Peak	DEMAND On Peak	GAS On Peak	GAS DMND On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	26,896	68	1,360	3
Feb	24,306	68	1,254	.3
March	27,659	68	967	3
April	25,190	68	257	1
May	25,059	69	0	0
June	26,135	73	0	0
July	27,253	75	0	0
Aug	27,290	73	0	0
Sept	24,024	70	0	0
Oct	26,703	68	378	1
Nov	25,906	68	613	2
Dec	26,515	68	1,280	3
Total	312,936	75	6,109	3

Building Energy Consumption =

94,977 (Btu/Sq Ft/Year)

Floor Area = 17,677 (Sq Ft)

Source Energy Consumption = 217,655 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

------ EQUIPMENT ENERGY CONSUMPTION-----

Ref	Equip						nly Consu			Sep	Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	sep	000			
0	LIGHTS						,	0020	9872	8950	9604	8950	9070	111,203
	ELEC	9337	8442	9872	8950	9604	9484	9070	32.2	32.2	32.2	32.2	32.2	32.2
	PK	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.12			
1	MISC LD						2522	7564	7907	7394	7793	7394	7564	90,948
	ELEC	7678	6939	7907	7394	7793	7622 24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24					
2	MISC LD						0	o	0	0	0	0	0	o
	GAS	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
3	MISC LD						•	0	0	0	0	0	0	o
	OIL	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••			
4	MISC LD							•	0	0	0	0	0	o
	P STEAM	0	0	0	0	0	0	0	_	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD							_	0	0	o	0	0	0
	P HOTH20	0	0	0	0	0	0	0			0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
6	MISC LD							_	•	0	0	0	0	o
	P CHILL	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	
1	EQ1170S		AIR		D COMP <					805	0	0	o	6,019
	ELEC	0	0	0	0	712	1253	1866	1384	5.6	0.0	0.0	0.0	8.1
	PK	0.0	0.0	0.0	0.0	5.3	6.9	9.1	6.9	5.8	0.0	0.0		
1	EQ5200		CON	DENSER F					188	108	o	0	o	815
	ELEC	0	0	O	0	96	172	252		0.8	0.0	0.0	0.0	1.1
	PK	0.0	0.0	0.0	0.0	0.8	1.0	1.1	0.9	0.8	0.0	0.0	•••	
:	1 EQ5313		CON	TROLS					158	99	0	0	0	691
	ELEC	0	0	0	О	114	125	195		0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0		
;	2 EQ1170S				ND COMP			2001	2652	1854	0	o	0	11,917
	ELEC	0		0	0	1783	2537	3091	10.8	9.3	0.0	0.0	0.0	12.0
	PK	0.0	0.0	0.0	0.0	8.9	10.8	12.0	10.8	3.3	5.0			
	2 EQ5200			ndenser 1			3.44	413	355	239	0	0	0	1,576
	ELEC	0	0	0	0	228	341	413	333	2.5				

PAGE 3

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

	PK .	0.0	0.0	0.0	0.0	1.3	1.5	1.6	1.5	1.3	0.0	0.0	0.0	1.6
,	EQ5313		CONTRO	ols										
•	EFEC	0	0	0	0	150	169	223	195	144	О	0	0	881
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
1	EQ4003		FC CE	NTRIF. F	AN C.V.								4555	11,387
•	RLEC	1665	1504	1665	1611	0	. 0	0	0	0	1665	1611	1665 2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	2.2	2.2	2.2	
1	EQ4003		FC CE	NTRIF. F.	AN C.V.							_	0	0
•	EFEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
2	EQ4381		PROPE	LLER FAN	ı								139	1,638
_	EFEC	139	126	139	135	139	135	139	139	135	139	135 0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
2	EQ4381		PROP	ELLER FAN	4					_	•	0	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
3	EQ4003		FC C	ENTRIF.	FAN C.V.						1665	1611	1665	19,605
	ELEC	1665	1504	1665	1611	1665	1611	1665	1665	1611 2.2	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2			
3	EQ4003		FC C	ENTRIF.					•	0	0	o	0	0
	ELEC	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•			
4	EQ4003		FC C		FAN C.V.		_		0	0	1665	1611	1665	11,387
	ELEC	1665	1504	1665	1611	0	0	0	0.0	0.0	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0				
	4 EQ4003				FAN C.V.			0	0	0	0	0	0	0
	ELEC	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•					
	5 EQ4003		FC	CENTRIF.	FAN C.V								2775	32,675
	ELEC	2775	2507	2775	2686	2775	2686	2775	2775	2686	2775	2686 3.7	2775 3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,	
	5 EQ4003		FC	CENTRIF.	FAN C.V					_	0	n	0	o
	ELEC	0	0	0	0	0	0	0	0	0	_	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1 EQ2001		GAS		BE HOT W		_	-	_	0	378	613	1280	6,109
	GAS	1360	1254	967	257	0	0	0	0.0					3.4
	PK	3.4	3.2	2.6	0.9	0.0	0.0	0.0	0.0	0.0	1.2			
	1 EQ5020		нел		CIRC. PU		_	_	0	0	786	1074	1110	6,865
	ELEC	1110		1110	671	0	0	0						1.5
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.3			

Trane Air Conditioning Economics

By: Trane Customer Direct Service Network

V 600

PAGE 4

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

1	EQ5240		BOILE	R FORCE	DRAFT I	FAN								3,027
	ELEC	490	442	490	296	0	0	0	0	0	347	474	490	0.7
	PK	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7
1	EQ5307		BOILE	ER CONTRO	ols				_	0	263	360	372	2,301
	ELEC	372	336	372	225	0	0	0	0				0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0. 5	

By: Trane Customer Direct Service Network

V 60

PAGE 7

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 NIGHT SETBACK FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	26,814	68	1,019	6
Feb	24,232	68	963	6
March	27,495	68	728	5
April	24,634	68	148	2
May	26,596	69	0	0
June	26,032	73	0	0
July	26,357	75	0	0
Aug	26,962	73	0	0
Sept	24,370	70	0	0
Oct	26,210	68	228	2
Nov	25,667	68	406	3
Dec	26,433	68	983	5
Total	311,801	75	4,474	6

Building Energy Consumption = Source Energy Consumption = 85,513 (Btu/Sq Ft/Year)

207,266 (Btu/Sq Ft/Year)

Floor Area = 17,677 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 RIGHT SETBACK FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION -----

						Mont	hly Const	mntion -						
Ref	pdark					mont May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	nay	oune	0417		•				
0	LIGHTS									2050	9604	8950	9070	111,203
	ELEC	9337	8442	9872	8950	9604	9484	9070	9872	8950 32.2	32.2	32.2	32.2	32.2
	PK	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2		
1	MISC LD										7793	7394	7564	90,948
	ELEC	7678	6939	7907	7394	7793	7622	7564	7907	7394	24.1	24.1	24.1	24.1
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24		
2	MISC LD												0	0
	GAS	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD										0	0	0	0
	OIL	0	0	0	0	0	0	0	0	0		0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •
4	MISC LD							_	0	0	0	0	0	0
	P STEAM	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •	
5	MISC LD				_		0	0	0	0	0	0	o	0
	P HOTH20	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
6	MISC LD	_		0	0	0	0	0	0	0	0	0	0	0
	P CHILL	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0		•						
1	EQ11708			-CLD CON					4407	723	o	o	0	5,150
	ELEC	0	0	0	0	573	1117	1540	1197 6.9	5.6	0.0	0.0	0.0	8.1
	PK	0.0	0.0	0.0	0.0	5.3	6.9	8.1	6.9	5.6	0.0	0.0	•••	
1	EQ5200		CON	DENSER F						•	0	0	0	689
	ELEC	0	0	0	0	77	151	206	160	96	0.0	0.0	0.0	1.1
	PK	0.0	0.0	0.0	0.0	0.8	1.0	1.1	0.9	0.8	0.0	0.0	•••	
:	EQ5313		CON	TROLS							0	0	0	490
	ELEC	0	0	0	0	82		118	109	80 0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0		
:	2 EQ1170S			R-CLD COM				2574	2311	1643	0	0	o	10,248
	ELEC	0	0	0	0	1501		12.0	10.8	9.3	0.0	0.0	0.0	12.0
	PK	0.0	0.0	0.0	0.0	8.9	10.8	12.0	10.6	<i></i>	2.0			
:	Z EQ5200			NDENSER I			•	244	305	208	0	0	0	1,337
	ELEC	0	0	0	0	189	293	341	305	208	U	·	-	•

PAGE 9

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2

BLDG 1350 NIGHT SETBACK FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	1.3	1.5	1.6	1.5	1.3	0.0	0.0	0.0	1.6
,	EQ5313		CONTE	ROLS										
-	ELEC	0	0	0	О	115	117	121	121	107	0	0	0	581
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
1	EQ4003				FAN C.V.		_	_	•	0	1665	1611	1665	12,705
	EFEC	1665	1504	1665	1611	1318	0	•0 0.0	0 0.0	0.0	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	0.0	0.0	0.0	2.2	2.2		
1	EQ4003		FC C	ENTRIF.	FAN C.V.									
	EFEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
•	EQ4381		PROP	ELLER FA	N.									
-	ELEC	139	126	139	135	139	135	139	139	135	139	135	139	1,638
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	EQ4381			ELLER FA					_		_	o	o	o
	ELEC	0	0	0	0	0	0	0	0	0 0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	EQ4003		FC C	ENTRIF.	FAN C.V.									
	BLEC	1665	1504	1665	1611	1665	1611	1665	1665	1611	1665	1611	1665	19,605
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
3	EQ4003		FC C	ENTRIF.	FAN C.V.									
·	ELEC	0	0	0	0	0	0	0	0	0	0	O	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			50.		E18 6 V									
4	EQ4003	1665	1504	1665	FAN C.V. 1611	763	497	244	401	739	1665	1611	1665	14,030
	ELEC PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	**													
4	BQ4003				FAN C.V.				_	_	_	_	0	0
	ELEC	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
5	EQ4003		FC (CENTRIF.	FAN C.V.									
	ELEC	2775	2507	2775	2686	2775	2685	2775	2775	2686	2775	2686	2775	32,675
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
5	EQ4003		FC (CENTRIF.	FAN C.V.									
Ī	ELEC	0	0	0	0	o	. 0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	700001			P. T. D. T.	BE HOT W	mpo								
1	EQ2001 GAS	1019	963	728	148	TER 0	0	0	О	0	228	406	983	4,474
	gas PK	6.1	5.9	4.9	1.6	0.0	0.0	0.0	0.0	0.0	1.6	2.7	4.7	6.1
	r.v.	0.1	3.9	7.7	1.0			•••						
1	EQ5020		HEA	T WATER	CIRC. PU									
	ELEC	1064	961	1018	358	0	0	0	0	0	509	940	1064	5,913
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600

PAGE 10

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 RIGHT SETBACK FT LEONARD WOOD

1	EQ5240 RLEC PK	4 69 0.7	BOILE: 424 0.7	449 0.7	158 0.7	O.0	0.0	0.0	o o.o	0 0.0	224 0.7	415 0.7	469 0.7	2,608 0.7
1	EQ5307 ELEC PK	356 0.5	BOILE 322 0.5	341 0.5	0.5	0.0	0.0	0.0	o 0.0	0.0	170 0.5	315 0.5	356 0.5	1,981

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 1350 DDC CONTROL FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
*	26,814	68	837	5
Jan Feb	24,232	68	790	4
March	27,495	68	583	3
April	24,634	68	128	1
May	26,296	70	0	0
June	25,302	72	0	0
July	25,608	75	0	0
Aug	26,145	72	0	0
Sept	23,523	69	0	0
Oct	26,210	68	203	1
Nov	25,588	68	345	2
Dec	26,433	68	852	3
Total	308,280	75	3,738	5

Building Energy Consumption = 80,668 (Btu/Sq Ft/Year)
Source Energy Consumption = 200,841 (Btu/Sq Ft/Year)

Floor Area = 17,677 (Sq Ft)

, 3

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3
BLDG 1350 DDC CONTROL FT LEONARD WOOD

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref	Equip -						hly Cons							
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
o	LIGHTS													
	ELEC	9337	8442	9872	8950	9604	9484	9070	9872	8950	9604	8950	9070	111,20
	PK	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
1	MISC LD													
	ELEC	7678	6939	7907	7394	7793	7622	7564	7907	7394	7793	7394	7564	90,948
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	1
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	(
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD								_	_			0	·
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0.0	0.4
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1170S			CLD COND							_	_	0	4,18
	ELEC	0	0	0	0	436	919	1271	978	578	0	0	0.0	7.1
	PK	0.0	0.0	0.0	0.0	4.6	6.4	7.5	6.4	5.1	0.0	0.0	0.0	7.
1	EQ5200			ENSER FA						77	0	0.	0	56:
	ELEC	0	0	0	0	59	125	170	131	77	0.0	0.0	0.0	1.0
	PK	0.0	0.0	0.0	0.0	0.7	0.9	1.0	0.9	0.7	0.0	0.0	0.0	1.
1	EQ5313			TROLS							0	o	o	43
	ELEC	0	0	0	0	71	86	108	97	72		0.0	0.0	0.
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.
2	EQ11708			CLD CONE				2125	21.43	1471	•	0	0	9,39
	ELEC	0	0	0	0	1332	2047	2406	2143	1471 9.0	0.0	0.0	0.0	12.
	PK	0.0	0.0	0.0	0.0	8.6	10.2	12.0	10.8	9.0	0.0	Ų.U	5.0	12.
2	EQ5200			enser fa							•	•	o	1,23
	ELEC	0	0	0	0	170	272	320	284	189	0	0	U	1,23

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 1350 DDC CONTROL FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	1.2	1.4	1.6	1.5	1.3	0.0	0.0	0.0	1.6
2	BQ5313		CONTR	OLS								_	•	546
	RLEC	0	0	О	0	101	112	121	118	93	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
1	BQ4003		FC CE	NTRIF. F	AN C.V.									10 774
	ELEC	1665	1504	1665	1611	1388	. 0	0	0	0	1665	1611	1665	12,774 2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	0.0	0.0	0.0	2.2	2.2	2.2	4.2
1	EQ4003		FC CE	NTRIF. E	AN C.V.						_	_	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ4381		PROP	ELLER FA	R								120	1,638
	ELEC	139	126	139	135	139	135	139	139	135	139	135	139 0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	EQ4381		PROP	ELLER FA	N							_		0
_	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	EQ4003		FC C	ENTRIF.	FAN C.V.								1665	19,605
	ELEC	1665	1504	1665	1611	1665	1611	1665	1665	1611	1665	1611 2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	212
3	EQ4003		FC C	ENTRIF.	FAN C.V.					_	•	0	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
4	EQ4003		FC (CENTRIF.	FAN C.V.							1611	1665	12,656
	ELEC	1665	1504	1665	1611	763	201	0	36	269	1665 2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
	EQ4003		FC	CENTRIF.	FAN C.V.					_	_	^	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	5 EQ4003		FC	CENTRIF.	FAN C.V.						0775	2685	2775	32,675
	EFEC	2775	2507	2775	2686	2775	2686	2775	2775	2686 3.7	2775 3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,	307	
	5 EQ4003				FAN C.V.					0	0	0	D	0
	BLEC	0	0	0	0	0	0	0	0.0	0.0		0.0		0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•	
	1 EQ2001		GAS		BE HOT W			_	_	_	203	345	852	3,738
	GAS	837		583	128	0	0	0	0	0.0				4.7
	PK	4.7	3.9	2.8	1.1	0.0	0.0	0.0	0.0	0.0	1.3	***	-·-	
	1 EQ5020		HE	AT WATER	CIRC. PU				_	_	E00	895	1064	5,868
	ELEC	1064		1018	358	0	0	0	0	0				1.5
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	

Trane Air Conditioning Economics By: Trans Customer Direct Service Network **v** 600 PAGE 16

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 1350 DDC CONTROL FT LEONARD WOOD

1	EQ5240 ELEC PK	469 0.7	BOILE 424 0.7	R FORCE 449 0.7	158 0.7	0.0	0 0.0	0.0	o o.o	0.0	22 4 0.7	395 0.7	4 69 0.7	2,588 0.7
1	EQ5307 ELEC PK	356 0.5	BOILE 322 0.5	341 0.5	120 0.5	0.0	0.0	0.0	0.0	0.0	170 0.5	300 0.5	356 0.5	1,967 0.5

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 1350 ECONOMIZER FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	26,814	68	837	.5
Feb	24,232	68	790	4
March	27,495	68	583	3
April	24,634	68	128	1
May	26,276	70	0	0
June	25,300	72	0	0
July	25,602	75	0	0
Aug	26,104	72	0	0
Sept	23,478	69	0	0
Oct	26,210	68	203	1
Nov	25,588	68	345	2
Dec	26,433	68	852	3
Total	308,165	75	3,738	5

Building Energy Consumption =

80,645 (Btu/Sq Ft/Year)

Floor Area = 17,677 (Sq Ft)

200,775 (Btu/Sq Ft/Year) Source Energy Consumption =

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 1350 ECONOMIZER FT LEONARD WOOD

------ EQUIPMENT ENERGY CONSUMPTION-----

Ref	Equip -										Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	oet	NOV	Dec	
0	LIGHTS												9070	111,203
	BLEC	9337	8442	9872	8950	9604	9484	9070	9872	8950	9604	8950		32.2
	PK	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.4
1	MISC LD											7394	7564	90,948
	ELEC	7678	6939	7907	7394	7793	7622	7564	7907	7394	7793 24.1	24.1	24.1	24.1
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	
2	MISC LD								_	0	0	o	0	0
	GAS	0	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	MISC LD								_		D	0	0	0
	OIL	0	0	0	0	0	0	0	0	0		0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	MISC LD												0	o
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	MISC LD										•	0	0	0
	P HOTH20	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	MISC LD					_		0	0	0	0	o	0	0
	P CHILL	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•		
1	EQ11705		AIR		D COMP <						0	0	0	4,055
	ELEC	0	0	0	0	422	885	1256	954	537 5.1	0.0	0.0	0.0	7.5
	PK	0.0	0.0	0.0	0.0	4.6	6.4	7.5	6.4	5.1	0.0	0.0		
1	EQ5200		CON	DENSER F					•••	73	0	0	o	549
	ELEC	0	0	0	0	58	121	168	129 0.9	0.7	0.0	0.0	0.0	1.0
	PK	0.0	0.0	0.0	0.0	0.7	0.9	1.0	0.9	0.7	0.0		•	
1	EQ5313			TROLS					97	72	0	0	o	434
	ELEC	0	0	0	0	71	86	108	0.3	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	•••		
:	2 EQ1170S				ND COMP		2079	2415	2129	1470	o	0	o	9,421
	ELEC	0	0	0	0	1327	10.2	12.0	10.8	9.0	0.0	0.0	0.0	12.0
	PK	0.0	0.0	0.0	0.0	8.6	10.2	14.0	10.0	5.0				
:	2 EQ5200			IDENSER I			276	321	283	189	o	0	0	1,238
	ELEC	0	0	0	0	169	276	321	203	103	•	_		

Trane Air Conditioning Economics By: Trane Customer Direct Service Network V 600

PAGE 21

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 1350 BCONOMIZER FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	1.2	1.4	1.6	1.5	1.3	0.0	0.0	0.0	1.6
2	BQ5313		CONTR	OLS							0	0	0	546
	ELEC	0	0	0	0	101	112	121	118	93 0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0		
1	EQ4003		FC CE	NTRIF. F					_	0	1665	1611	1665	12,774
	ELEC	1665	1504	1665	1611	1388		0	0.0	0.0	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	0.0	0.0	0.0				
1	EQ4003		FC C	ENTRIF. I				_	•	0	0	0	0	0
	ELEC	0	0	O	0	0	0	0	0 0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••		
2	EQ4381		PROP	ELLER FA	N						120	135	139	1,638
	ELEC	139	126	139	135	139	135	139	139	135	139 0.2	0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
2	EQ4381		PROP	ELLER FA	N					_		0	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	EQ4003		FC C	ENTRIF.	FAN C.V.						4555	1611	1665	19,605
	ELEC	1665	1504	1665	1611	1665	1611	1665	1665	1611	1665 2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
3	EQ4003		FC (ENTRIF.	FAN C.V.						•	0	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
4	EQ4003		FC (CENTRIF.						252	1665	1611	1665	12,656
	ELEC	1665	1504	1665	1611	763	201	0	36	269	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.0	
4	£ EQ4003		FC	CENTRIF.						•	0	0	o	0
	ELEC	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••		
:	5 EQ4003		FC	CENTRIF.	FAN C.V						0775	2686	2775	32,675
	ELEC	2775	2507	2775	2686	2775	2686	2775	2775 3.7	2686 3.7	2775 3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,	•••		
	5 EQ4003			CENTRIF.						•	0	0	0	0
	ELEC	0	0	0	0	0	0	0	0.0	0.0		0.0		0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	1 EQ2001			FIRE TU				_	_		203	345	852	3,738
	GAS	837	790	583	128	0	0	0	0.0	0.0				4.7
	PK	4.7	3.9	2.8	1.1	0.0	0.0	0.0	0.0	0.0	1.3			
	1 EQ5020		HEA	AT WATER					=	_	509	895	1064	5,868
	ELEC	1064		1018	358	0	0	0	0	0.0				1.5
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.3	1.3		

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600 PAGE 22

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4
BLDG 1350 ECONOMIZER FT LEONARD WOOD

1	EQ5240		BOILE	ER FORCE	DRAFT 1	FAN								
	BLEC	469	424	449	158	0	0	0	0	0	224	395	469	2,588
	PK	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7
1	EQ5307		BOIL	ER CONTRO	ols.									
	ELEC	356	322	341	120	0	0	0	0	0	170	300	356	1,967
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5

PAGE 1

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 OA NIGHTIME FT LEONARD WOOD

	ELEC On Peak	DEMAND On Peak	GAS On Peak	GAS DMND On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	25,958	68	141	1
Feb	23,556	68	127	1
March	26,258	68	60	.0
April	23,406	65	5	0
May	25,209	69	0	0
June	26,273	73	0	0
July	26,915	75	0	0
Aug	27,336	73	0	0
Sept	24,249	70	0	0
Oct	24,563	65	2	0
Nov	23,951	65	0	0
Dec	24,676	65	12	0
Total	302,349	75	346	1

Building Energy Consumption = Source Energy Consumption = 177,207 (Btu/Sq Ft/Year)

60,334 (Btu/Sq Ft/Year)

17,677 (Sq Ft) Floor Area =

RLEC

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 OA HIGHTIME FT LEONARD WOOD

----- EQUIPMENT ENERGY CONSUMPTION-----

----- Monthly Consumption -----Ref Equip Nov Total Sep Oct June July Feb Mar Apr May Jan Num Code 0 LIGHTS 111,203 9070 8950 9604 8950 9484 9872 8950 9604 9070 8442 9872 9337 ELEC 32.2 32.2 32.2 32.2 32.2 32.2 32.2 32.2 32.2 32.2 32.2 32.2 PK 1 MISC LD 90,948 7793 7394 7564 7907 7394 7622 7564 7793 7394 7678 6939 7907 ELEC 24.1 24.1 24.1 24.1 24.1 24.1 24.1 24.1 24.1 24.1 24.1 PK 24.1 24.1 2 MISC LD 0 0 0 0 0 0 0 0 0 0 0 0 GAS 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 0.0 3 MISC LD 0 0 0 0 0 0 0 0 0 0 n OIL 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 4 MISC LD 0 0 0 0 0 0 0 0 0 0 0 0 0 P STEAM 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 5 MISC LD ٥ 0 0 0 0 0 0 0 0 0 0 P HOTH20 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 6 MISC LD 0 0 0 0 0 0 0 0 0 0 0 0 0 P CHILL 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK AIR-CLD COND COMP <20 TONS 1 EQ11705 0 0 6.039 0 875 0 0 0 740 1303 1722 1399 ELEC 0 8.1 5.6 0.0 0.0 0.0 6.9 0.0 5.3 6.9 8.1 0.0 0.0 0.0 PK CONDENSER FANS 1 EQ5200 0 803 0 231 186 114 0 174 97 ELEC 0 0 0 0 0.0 0.0 1.1 0.8 0.0 0.8 1.0 1.1 0.9 0.0 0.0 PK 0.0 0.0 CONTROLS 1 E05313 0 0 223 207 153 0 188 0 0 0 158 ELEC 0 0.3 0.0 0.0 0.3 0.3 0.3 0.0 0.3 0.0 0.3 0.0 0.0 0.0 PK AIR-CLD COND COMP <20 TONS 2 EQ11705 11,769 0 0 0 1912 2914 2615 0 0 0 1809 2519 0 BLEC 12.0 0.0 0.0 0.0 10.8 9.3 12.0 0.0 0.0 8.9 10.8 0.0 0.0 PK CONDENSER FANS 2 EQ5200 1,540 0 0 o 388 348 242 227 334 0 0 0 0

Trane Air Conditioning Economics By: Trane Customer Direct Service Network V 600

PAGE 3

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 OA NIGHTIME FT LEONARD WOOD

BLLUG	1550 01 115													
	PK	0.0	0.0	0.0	0.0	1.3	1.5	1.6	1.5	1.3	0.0	0.0	0.0	1.6
2	EQ5313		CONTR	ols									0	1,041
	BLEC	0	0	0	0	202	216	223	223	177	0	0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.5
1	BQ4003		FC CE	NTRIF. F	AN C.V.					_		1554	1665	9,899
	RFEC	1665	1504	1665	940	0	. 0	• 0	0	0	895 2.2	1564 2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	
1	EQ4003		FC CI	ENTRIF. F	AN C.V.							0	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
2	EQ4381		PROP	ELLER FAI	4								139	1,638
	ELEC	139	126	139	135	139	135	139	139	135	139	135	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	EQ4381		PROP	ELLER FA	N							0	0	0
	RFEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
3	EQ4003		FC C	ENTRIF.						1611	1665	1611	1665	19,605
	RFEC	1665	1504	1665	1611	1665	1611	1665	1665 2.2	2.2	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	***				
3	EQ4003				FAN C.V.				0	0	0	0	0	0
	ELEC	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	***		
4	EQ4003				FAN C.V.				0	0	1665	1611	1665	11,387
	ELEC	1665	1504	1665	1611	0	0	0.0	0.0	0.0	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0		2		
4	EQ4003				FAN C.V.		•	0	0	0	o	0	0	0
	EFEC	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
5	EQ4003				FAN C.V.				0775	2686	2775	2686	2775	32,675
	BLEC	2775	2507	2775	2686	2775	2686	2775 3.7	2775 3.7	3.7	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,	J.,	•••	• • • •		
	EQ4003				FAN C.V.	•	•	0	0	0	0	0	0	0
	ELEC	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
;	1 EQ2001				BE HOT W		_	^	0	0	2	0	12	346
	GAS	141	127	60	5	0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.7
	PK	0.7	0.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0				
	1 EQ5020				CIRC. PU		_	_	•	0	15	0	75	1,617
	ELEC	582	580	321	45	0	0.0	0.0	0.0	0.0	1.5		1.5	1.5
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	2.0		

	e Air Conditi Trane Custome			Network										V 600 PAGE 4
EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 OA NIGHTIME FT LEONARD WOOD														
1	EQ5240 BLEC PK	257 0.7	BOILE 256 0.7	ER FORCEI 141 0.7	20 0.7	FAN O O.O	0 0.0	0.0	0.0	0 0.0	7 0.7	0.0	33 0.7	713 0.7
1	EQ5307 ELEC PK	195 0.5	BOIL: 194 0.5	ER CONTRO 108 0.5	DLS 15 0.5	0.0	0.0	0 0.0	0.0	0 0.0	5 0.5	0.0	25 0.5	542 0.5

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 OA DAYTIME FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	25,958	68	206	.1
Feb	23,532	68	174	1
March	26,308	68	88	1
April	23,406	65	5	0
Мау	25,085	67	0	0
June	25,755	70	0	0
July	26,342	71	0	0
Aug	26,886	69	0	0
Sept	23,984	67	0	0
Oct	24,563	65	2	0
Nov	24,009	65	6	0
Dec	25,134	65	66	0
Total	300,963	71	548	1

Building Energy Consumption = Source Energy Consumption = 61,207 (Btu/Sq Ft/Year)

177,605 (Btu/Sq Ft/Year)

Floor Area = 17,677 (Sq Ft)

PAGE 8

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 OA DAYTIME FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION -----

D-4	Wante -					Mont	hly Consu	mption -						
Ref	Equip - Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS		-440	9872	8950	9604	9484	9070	9872	8950	9604	8950	9070	111,203
	ELEC	9337	8442		32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
	PK	32.2	32.2	32.2	32.2	32.2	5212	••••						
1	MISC LD									7394	7793	7394	7564	90,948
	BIEC	7678	6939	7907	7394	7793	7622	7564	7907	24.1	24.1	24.1	24.1	24.1
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1		••••	
2	MISC LD											_	0	0
_	GAS	0	0	0	0	0	0	0	0	0	0	0		0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													0
_	OIL	0	0	0	0	0	0	0	0	0	o	0	0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													0
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	PK	. 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD												0	0
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD								_	_	o	0	0	O
	P CHILL	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	EQ1170S		AIR	-CLD CON	D COMP <	20 TONS						_	o	5,318
	ELEC	0	0	0	0	702	1090	1544	1222	761	0	0.0	0.0	5.6
	PK	0.0	0.0	0.0	0.0	4.5	5.0	5.6	5.1	4.6	0.0	0.0	0.0	
1	EQ5200		CON	DENSER F	ANS							0	0	710
	ELEC	0	C	0	0	93	147	206	163	100	0	0.0	0.0	0.7
	PK	0.0	0.0	0.0	0.0	0.6	0.7	0.7	0.7	0.7	0.0	0.0	0.0	
1	1 EQ5313		CON	TROLS							o	0	0	710
	RLEC	0	0	0	0	123	125	195	158	108	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	
:	2 EQ1170S		AII		NTD COMP						0	0	0	10,984
	ELEC	0	0	0	0	1766	2331	2615	2439	1833	0.0	0.0	0.0	10.0
	PK	0.0	0.0	0.0	0.0	8.1	9.2	10.0	9.3	8.4	0.0	0.0	0.0	-71-
:	2 EQ5200		con	NDENSER !							o	0	0	1,427
	ELEC	0	0	0	0	220	308	347	322	230	U	Ū	U	-,

PAGE 9

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 OA DAYTIME FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	1.2	1.3	1.3	1.3	1.2	0.0	0.0	0.0	1.3
2	BQ5313		CONTR	ols									•	1,044
	RLEC	0	0	0	0	205	216	223	223	177	0	0	0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
1	EQ4003		FC CE	NTRIF. F	AN C.V.								1665	9,899
	ELEC	1665	1504	1665	940	0	0	0	0	0	895	1564	1665	2.2
	PK	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	2.2
1	EQ4003		FC CE	ENTRIF. F	AN C.V.							_	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ4381		PROPI	ELLER FA	4									1,638
	ELEC	139	126	139	135	139	135	139	139	135	139	135	139	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	EQ4381		PROP	ELLER FA	N							_		0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	EQ4003		FC C	ENTRIF.	FAN C.V.								1665	19,605
	ELEC	1665	1504	1665	1611	1665	1611	1665	1665	1611	1665	1611	1665	2.2
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
3	EQ4003		FC C	ENTRIF.	FAN C.V.							_	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	EQ4003		FC (CENTRIF.	FAN C.V.					_		1611	1665	11,387
	ELEC	1665	1504	1665	1611	0	0	0	0	0	1665	1611	1665 2.2	2.2
	PK	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	2.2
4	EQ4003		FC (CENTRIF.	FAN C.V.						_	_	o	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9	5 EQ4003		FC	CENTRIF.	FAN C.V.							2505	2775	32,675
	ELEC	2775	2507	2775	2686	2775	2586	2775	2775	2686	2775	2686 3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,	
	5 EQ4003		FC	CENTRIF.	FAN C.V					_	_	•	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	010
	1 EQ2001		GAS	FIRE TU	BE HOT W						-	_	66	548
	GAS	206	174	88	5	0	0	0	0	0	2			1.1
	PK	1.1	0.8	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	2.1
	1 EQ5020		HE?	AT WATER	CIRC. PU							2.2	222	1,923
	ELEC	582	567	349	45	0	0	0	0	0	15	33		1,923
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.3	1.3

Trane Air Conditioning Economics By: Trane Customer Direct Service Network V 600

PAGE 10

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 1350 OA DAYTIME FT LEONARD WOOD

1	EQ5240		BOIL	ER FORCE	DRAFT 1	Fan							4.47	848
	ELEC	257	250	154	20	0	0	0	0	0	7	14	147 0.7	0.7
	PK	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	• • • • • • • • • • • • • • • • • • • •
1	EQ5307		BOIL	ER CONTR					0	0	5	11	111	645
	ELEC	195	190	117	15	0	0	0		_		0.5	0.5	0.5
		0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	

COMPUTER SIMULATIONS

BUILDING 1720

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO .:

1720

BLDG. TYPE:

BARRACKS

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1070.3	1024.2	980.2			
COOLING (kWH)	40300	39310	36970			

SUPPLY AIR FAN	37800 CFM
FLOOR AREA	22876 FT ²
CFMI	1348 CFM
UA	5819 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

8760 HR/YR

4368 HR/YR

2928 HR/YR

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	0	2400	120 HR	HR. ON HEATING	4368 HR/YR
SAT.	0	2400	24 HR	HR. ON COOLING	2928 HR/YR
SUN.	0	2400	24 HR	HR. OFF HEATING	0 HR/YR
	TOTAL OCCU	PY HR.	168 HR/WK	HR. OFF COOLING	0 HR/YR
	TOTAL UNOC	C. HR.	0 HR/WK		
	ANNUAL OCC	UPY HR.	8760 HR/YR		
	ANNUAL UNC	CC. HR.	0 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

HOUR SAVE (HEATING ONLY) 4368 - 4368 = 0 HR/YR HOUR SAVE (COOLING ONLY) 2928 - 2928 = 0 HR/YR

HOAUHC	1070.3 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
TIOAUTIO	1348 CFM *	0 HR/YR		0.002 100 2.0, 0
HOAUH	1070.3 MBtu -	0 MBtu	=	0,00E+00 Btu/CFM-HR
7,0,10	1348 CFM *	0 HR/YR		·
COAUHC	40300 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1348 CFM *	0 HR/YR		
COAUC	40300 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1348 CFM *	0 HR/YR		
НОАОНС	1070.3 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	1348 CFM *	8760 HR/YR		
HOAOH	1070.3 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	1348 CFM *	4368 HR/YR		
COAOHC	40300 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	1348 CFM *	8760 HR/YR		
COAOC	40300 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	1348 CFM *	2928 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

04-Mar-93

BUILDING NO.: BLDG. TYPE:

1720 **BARRACKS**

ENERGY CONSTANT CALCULATIONS

ECC	36970 kWH -	0 kWH	_	0.00E+00 kWH/CFM-HR	
	37800 CFM *	2928 HR/YR			
ECHC	36970 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	37800 CFM *	8760 HR/YR			
NSUCHC	40300 kWH -	39310 kWH	_ =	0.00E+00 kWH/CFM-HR	
	37800 CFM *	0 HR/YR			
NSUCC	40300 kWH -	39310 kWH	=	0.00E+00 kWH/CFM-HR	
	37800 CFM *	0 HR/YR			
DDCCHC	39310 kWH -	36970 kWH	=	7.07E-06 kWH/CFM-HR	
	37800 CFM *	8760 HR/YR			
DDCCC	39310 kWH -	36970 kWH	=	2.11E-05 kWH/CFM-HR	
	37800 CFM *	2928 HR/YR			
NSC	1070.3 MBtu -	1024.22 MBtu	=	7.92E+03 Btu/UA	
	5819	UA			
DSC	1024.22 MBtu -	980.18 MBtu	=	7.57E+03 Btu/UA	
	5819	UA			
OPT	(2 HR/DAY X 272 DAY	/YR) – 294	HR/YR		
			=	0 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
			=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	

EMC ENGINEERS, INC. DATE: 22-Feb-93 BY: TMB PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN **CLIENT PROJ. ENG.: DOUG CAGE** FILE: 1720BHL LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 1720 BLDG NAME: EM BARRACKS BLDG NO: BARRACKS **BLDG FUNCTION:** # FLOORS 3 22,876 FLOOR AREA: (SQ. FT) 600 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL SOUTH **EAST** WEST NORTH 18,986 5.343 5,171 4,236 4,236 (SQ. FT) WALLS, GROSS 2,327 1,179 1,148 0 0 (SQ. FT) GLASS 252 126 PERSONNEL DOOR (SQ. FT) 0 0 126 864 1,752 888 0 0 **INSULATED PANEL** (SQ. FT) 14,655 3,150 3,033 4,236 WALLS, NET (SQ. FT) 4,236 (SQ. FT) 7,721 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 1,752 PERSONNEL DOOR (SQ. FT) 252 (SQ. FT) INSULATED PANEL 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) **OUTSIDE AIR FILM** 0.17 0.43 4" FACE BRICK 0.91 4"FACE BPICK AIR SPACE 3. 1.5' RIGID INSULATION 4.98 4. AIRSPACE 6' CONCRETE BLOCK 1.89 11/2" RIGID INSULATION 5. 6"CMU 0.68 INSIDE AIR FILM 9.06 TOTAL R-WALL = 0.110 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 OUTSIDE AIR FILM BUILT-UP ROOF 0.34 BUILT UP ROOF 2. 3" RIGID INSULATION 10.03 3" INSULATION 3. 1.00 METAL DECKING **CEILING AIR SPACE** 4. CEILING AIR SPACE 1.79 **ACOUSTIC TILE** ACOUSTIC TILE 6 0.68 7. INSIDE AIR FILM 14.01 TOTAL R-ROOF = 0.071 U=1/R1.61 **R-GLASS** PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. GLASS TYPE: 0.49 SLF CONCRETE SLAB TYPE FLOOR: R-BASEM 0.00 NONE **BASEMENT TYPE:** R-PANEL 4.20 INSULATED PANEL: 2.56 R-PDOOR **METAL** PERSONNEL DOOR TYPE: III. INFILTRATION: 0.069 1,310 X CFM / SQ.FT. 18986 TIGHT WALL H/M/L (SQ.FT.) М 0 0.000 AVG. WALL H/M/L (SQ.FT.) X CFM / SQ.FT. 0 0.000 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 38 X CFM /OPENING /HR 1.600 = DOOR OPENINGS / HR - SINGLE DOOR 0 1.385 X CFM /OPENING /HR = DOOR OPENINGS / HR - DOUBLE DOORS 1348 TOTAL INFILTRATION (CFM) = 417 0.238 X PANEL 'U' = PANEL AREA 1,752 = **UA PANEL** 98 0.391 X DOOR 'U' = = PDOOR AREA 252 **UA PDOOR** 1,617 X WALL 'U' 0.110 = 14,655 **UA WALL** = WALL AREA X ROOF 'U' 551 0.071 = ROOF AREA 7,721 **UA ROOF** 1,445 0.621 2,327 X GLASS "U" = = GLASS AREA **UA GLASS** 294 0.490 = SLAB PERIM. 600 X SLF = **UA SLAB** X BASE. "U" 0 0.000 UA BASEM. =B-WALL AREA 0 1,396 X A. T. F. 1.035 CFM 1348 INFILTRATION 5,819 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

TMB 3204-000 04-Feb-93 EMC NO.: DATE: PREPARED BY:

d 72 8

ZONE

	1720Z	
CHECKED BY:	FIE:	Ę,

			Peak Wattage Value for Lights		
	No. of Fixture	Fixture		Watts/Fixture	Total Wattage
S	roxures		17 Incordence - 40w	8	120
-	2 6	- 0	Hicardescent Bow	09	11,520
	192	ه او	Find incernoescent - compared the belief Ovd # fixture)	84	2,016
	24		6 FIUOTESCENT, Z - 34W KRIIDS, TOW CAREST PATTER INTEREST	50	2 400
	48		5 Fluorescent, 1 - 34W IRM p, IOW DRIIBS! (174 IL. IIXIUIS)	3	
					0100,
TOTAL	757			TOTAL	acn'al
ב כ	į.				

			Peak Value for Internal Gains				
					Hoat Gain		Total
Zone	No. of Equip.	Equip.		Average Wattage		to Space (%) Total Wattage	(BTU)
ģ	Equipmen	60 X	Ш	1001	Ш	10,464	35,714
_	96		50 Hadio/Hecord Player	7		A 6.24	22,608
	48		53 Refrigerator (small)	88			44.447
	48	31		88	20%	4774) t
	2		A				
_							
				TOTAL	18%		21,312 72,738

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41—92—C—0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

EMC NO.:

3204 – 000 04 – Feb – 93 TMB CEL DATE:
PREPARED BY:
CHECKED BY:
FILE:
BIDG:

1720Z1	1720	
FILE	BLDG:	ZONE

20.18	BIDG	TYPEOF										Í	₽ B	HOUR NUMBER	BER										
7 2 2) <u>4</u>	DECENT OF THE PERSON OF THE PE	-	6	۳.	4	2	8	7	æ	6	10	F	12	13	4	12 13 14 15 16	16 1	7 1	9 15	Z Z	17 18 19 20 21 22	8	ន	24
			=	3	,			1		,							ŀ			1	1	0	1	[•
	Barrocke	VOCCI IDANCY	F	F	-	-	-	-	90	0.4	0.0	0.7	0	0.1 0.1 0.1				0.1 0.3 0.5	5 0B	8 0.5	60 60	S.O		-	-
_	Dallacks			1	1	1	1		,	3	0	3	5	5	5	5	9	100000	α C	ď	-	_	1 05 02		02
		D'HE LO	02 02 02 02 02	020	020	20	Q.	20.00	_	N O	70	7 0 70 70 07 07 07 07 07	Y	V	7	7	4	2	5		-	-	3		
		DECKE	6	6	03 03 03	6.0	0.3	0.5	0.5	03	03	0.3	33	0.3) 3	33)33	05 05 03 03 03 03 03 03 03 03 03 05 06 07 09 09 09 05	9	7 0 5	50 6	60	0.5	03	0.3
		3	5	5	2	2		!		-															







BLDG 1720 - E.M. BARRACKS BASERUN (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS ------
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

LAST CASE FLAG (1=YES. 0=NO) (LSTCS)

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
  FILE NAME MO
                               YEAR 1955
 STATION 13995
 SITE LATITUDE DEG (AL1) 37.750000
SITE LATITUDE DEG (AL1) 37.750000

ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.0000000
 AMPLITUDE OF GROUND TEMP SWING DEG F (ANGRA)

SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO)

TO .000000

INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 190625.000000
 FLOOR AREA (SQFT) 22876.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 620930.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -725350.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 228760.000000
  CONSTANT INFILTRATION RATE CFM (CFMI) 1348.000000
  INFILTRATION PROFILE
                                                                                                                             1.00
                                                                                                        .800
                                                                                                                                                  1.00
                                        .800 .800 .800
                    .800
    .800
                                                                                1.00
                                                                                                        1.00
                                                                                                                                                  1.00
                                                                                                                             1.00
    1.00 1.00 1.00 1.00
                                                                                                        .800
                                                                                                                             .800
                                                                                                                                                   .800
                                                                                    1.00
                                                               1.00
    1.00 1.00
                                          1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 4.240000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 23702.360000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 294.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
  PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 98.000000
WINDOW GLASS NUMBER (NG) 30
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
  WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

WALL DATA

1 2 3 4

1 00 90.00 180.00 -90.00

1236.0 4038.0

4038.0
1179.0
1148.0 .0 1179.0

10.0 10.0 .0 10.0

117.9

117.9
```

```
120.0 120.0
                                                                                                                      120.0 120.0
MAX SOLAR WITH NO SHADE (SOLMX)
                                                                                                                       .110
                                                                                                                                                .138
                                                                                                 .137
                                                                            .110
U VALUE BTU/(HR-SQFT-F) (UW)
WALL TRANSFER FUNCTIONS
                                                                                                                                               .00508
                                                                                                 .00505 .00405
                                                                           .00405
  CN FACTORS
                                                                                                                                                 5
                                                                                                                           5
                                                                                                    5
  NUMBER OF BN FACTORS (NB
                                                                            5
  BN FACTORS BN (BN)
                                                                                                  .00001 .00001
.00070 .00056
                                                                                                                                               .00001
                                                                            .00001
    N=1
                                                                                                                                               .00071
                                                                            .00056
    N=2
                                                                                                                                                .00280
                                                                                                   .00278 .00223
                                                                                                                                            .00145
                                                                            .00223
    N=3
                                                                                                 .00144 .00116
.00011 .00009
                                                                            .00116
    N=4
                                                                        .00009 .00011
                                                                                                                                                 .00011
     N=5
                                                                                                                      *****
                                                                                                                                             ****
     N=6
                                                                                                                       5
                                                                                                  5
                                                                            5
NUMBER OF DN FACTORS (ND)
                                                                                              1.00000 1.00000 1.00000
     DN FACTORS
                                                                         1.00000
     N=1
                                                                        -1.71940 -1.71940 -1.71940 -1.71940
                                                                                                 .84375 .84375 .84375
     N=2
                                                                            .84375
                                                                                                                                            -.09022
     N=3
                                                                                                -.09022 -.09022
                                                                           -.09022
     N=4
                                                                                                                      .00268
                                                                                                                                                 .00268
                                                                            .00268 .00268
     N=5
                                                                                                                                            *****
                                                                                                                      *****
                                                                         ****
     N=6
ROOF AREA SQFT (AROF) 7721.000000
ROOF U VALUE BTU/HR-SQFT-F (URF) 7.100000E-02
ROOF TRANS FUNCTIONS USED (1=YES, 0=NO) (IROOF)
                                                                                                                                       1
                                                                             3.441956E-02
 ROOF C TRANSFER FUNCTION (CNR)
 ROOF B TRANSFER FUNCTIONS (BNR)
   .193E-02 .199E-01 .120E-01 .540E-03 771.
                                                                                                                      771.
 ROOF D TRANSFER FUNCTIONS (DNR)
                 -.600 .822E-01 -.300E-03 999.
                                                                                                                      999.
   1.00
 SKYLIGHT TILT DEGREES (TILT) 0.000000E+00
SKYLIGHT AZIMUTH ANGLE DEGREES (AZSK) 999
                                                                                               9999.000000
 SKYLIGHT HEIGHT FT (SKH) 0.000000E+00
SKYLIGHT WIDTH FT (SKW) 0.000000E+00
 SKYLIGHT WIDTH FT (SKW) 0.000000E+00
SKYLIGHT OVERHANG WIDTH FT (SKOW) 0.000000E+00
 OVERHANG HEIGHT ABOVE SKYLIGHT FT (SKOH) 0.000000E+00
 SKYLIGHT GLASS NUMBER (NS) 1
SKYLIGHT SHADING COEFFICIENT (SHSK) 0.000000E+00
 SUMMER START MONTH AND DAY FOR SHSK (MST, NDST)
  SUMMER END MONTH AND DAY FOR SHSK (MND, NDND)
 SKY LIGHT AREA SQFT (ASKY) 0.000000E+00
DAYTIME SKY LIGHT U BTU/SQFT-HR-F (SKYU)
 NIGHT TIME SKYLIGHT U BTU/SQFT-HR-F (SKYU) 1.292998
FRACTION OF PROCESS HEAT TO IMPROVE TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEAT TO THE PROCESS HEA
                                                                                                                1.292998
                                                                                                                       1.800000E-01
```

-----INTERNAL GAINS AND PROFILES -----THERMOSTAT SET POINT DEG F

PEAK VAL	KW - LIGHTS 16.	PROCESS S	BTU/HR - PEOPLE ENSIBLE 21600.		HEATING	COOLING
HOUR	HC	URLY FRACT			70.0	75.0
1	.200	.300	1.000	1.000	70.0	
<u> </u>	.200	.300	1.000	1.000	70.0	75.0
2		.300	1.000	1.000	70.0	75.0
3	.200		1.000	1.000	70.0	75.0
4	.200	.300		1.000	70.0	75.0
5	.400	.300	1.000		70.0	75.0
6	.800	.500	1.000	1.000		
7	1.000	.500	.600	.600	70.0	75.0
•	.200	.300	.400	.400	70.0	75.0
8		.300	.100	.100	70.0	75.0
9	.200	•	.100	.100	70.0	75.0
10	.200	.300			70.0	75.0
11	.200	.300	.100	.100	• • •	75.0
12	.200	.300	.100	.100	70.0	75.0

```
75.0
                                               .100
                                                              70.0
                         .300
                                     .100
             .200
  13
                                                              70.0
                                                                           75.0
                                                .100
                                     .100
              .200
                         .300
  14
                                                                           75.0
                                                              70.0
                                     .100
                                                .100
              .200
                         .300
  15
                                                                           75.0
                                                .300
                                                              70.0
                                     .300
                         .500
              .200
  16
                                                                           75.0
                                                .500
                                                              70.0
                         .600
                                     .500
              .400
  17
                                                                           75.0
                                                              70.0
                                    .800
                                                .800
                         .700
              .800
  18
                                                                           75.0
                                                              70.0
                                    .900
                                                .900
                         .900
             1.000
                                              .900
  19
                                                                           75.0
                                                             70.0
                                    .900
                         .900
             1.000
  20
                                                                           75.0
                                                .900
                                                              70.0
                         .900
                                     .900
             1.000
  21
                                                              70.0
                                                                           75.0
                                               1.000
                         .500
              .500
                                    1.000
  22
                                                              70.0
                                                                           75.0
                                    1.000 1.000
1.000 1.000
               .200
                         .300
  23
                                                                           75.0
                                                              70.0
              .200
                          .300
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 65.000000
  24
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT)
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 37800.000000
ECONOMIZER HIGH TEMP LIMIT F 65.000000
                                      0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR 24.00000 SYSTEM SUPPLY AIR STOP TIME HR 55.000000
                                       24.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
                                                0.00000E+00
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
FAN EFFICIENCY (EFAN) 5.500000E-01

FAN TOTAL PRESSURE IN. WATER (DP) 1.250000E-01

HEATING PLANT RATED OUTPUT BTU (HFLOT) 620930.000000

HEATING PLANT RATED INPUT BTU (HFLIN) 776162.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                    .400
                                                                                 .451
                                                         .369
                                              .300
                                  .286
                        .200
            .191
 .100
                                                                                 .812
                                                         .718
                                             .700
                                                                     .800
                                   .625
                        .600
             .537
 .500
                                    1.00
             .906
                        1.00
 .900
CHILLER TYPE (ITYPCH)
                                    0
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                              725350.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 134096.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                      .400
                                                                                 .370
                                           .300
                                                         .310
                        .200
                                  .250
             .200
  .100
                                                                                 .760
                                                                      .800
                                                          .650
                                              .700
                                    .550
                        .600
  .500
             .450
                                    1.00
        .880
                        1.00
  .900
```

BLDG 1720 - E.M. BARRACKS BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

				SOLAR		PARTITM DOOR AND				VENT AND	
		TOND		THRU	ROOF	STAR	BSMT	WALL	WINDOW	INFL	LATENT
MI.	DИ ИЛН	LUAD 0.	GAIN	33.	0.	0. -10.	0.	0.	0.	0.	0.
01		-169.	LOSS		-16.	-10.	0.	-40.	-32.	-13/.	0.
					•	•	0	0	0.	0.	0.
FI	EΒ	0.	GAIN	44.	-14	0. -9.	0.	-29.	-28.	-119.	0.
		-123.	LOSS		-14.	٠.	•				_
w	7A TD	7	CATN	54.	0.	0. -8.	0.	2.	0.	0.	1.
PLI	мк	-93.	LOSS		-12.	-8.	0.	-21.	-26.	-109.	0.
		,,,,					20	0.01	10	66	3.78
A)	PR	35.87		57.65	.57	.06 -4.88	.00	8.01	-15.29	-63.50	.00
		-32.76									
		70 47	CATN	63 66	1.36	.21	.00	15.53	.63	1.89	13.11
M	AY	79.47 -5.95	LOSS	03.00	-4.89	-2.81	.00	-2.33	-8.51	-38.00	.00
J	UN	162.	GAIN	63.	2.	1.	0.	24.	∠. -∆.	-14.	0.
		0.	LOSS		-3.	1. -1.	0.	0.	**		_
					3.		0.	30.	4.	14.	69.
J	UL	207. 0.	LOSS	05.	-2.	-1.	0.	0.	-2.	-8.	0.
		٠.	ДОВВ				_		-	10	69
A	UG	189.	GAIN	58.	3.	1. -1.	0.	26.	-2	-8.	0.
		0.	LOSS		-2.						
_		116.	CATN	10	1.	1. -2.	0.	15.	2.	6.	43.
S	EΡ	-9.	LOSS	47.	-4.	-2.	0.	-3.	-7.	-26.	0.
o	CT	29.36	GAIN	40.12	.29	.08	.00	4.05	-14.08	-52 21	-00
		-32.58	LOSS		-/.54	4.01					
			~~ ~~	21 42	02	.00 -6.66	. 00	.84	.00	.02	1.12
N	OV	6.88	GAIN	31.42	-10.96	-6.66	.00	-22.08	-20.37	-78.08	.00
		-/9.01	TOSS		10.70					_	•
D	EC	0.	GAIN	29.	0.	0.	0.	0.	0.	_130	0.
Ī		-167.	LOSS		-16.	0. -10.	0.	-41.	-31.	-130.	٠.
	_		~ · · · · ·	E07	12	4. -61.	0.	125.	12.	38.	261.
Т	'OT	833.	GAIN	567.	-101.	-61.	ō.	-178.	-190.	-784.	0.
		-/11.	TOSS								
							10	TIOITD !	זאול מ	2 ተውእም ጥ	емъ 1.
M	ΙΑΧ	HEATING	LOAD=	-62	20930.	BTUH ON BTUH ON	DEC 18	HOUR 1	D AMI	BIENT T	EMP 1.
M	IAX	COOLING	LOAD=	57	12/15.	PIOU ON	0011 3	110010 11			

ZONE UA BTU/HR-F 4135.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720.I BLDG 1720 - E.M. BARRACKS BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATU MAX	PACE JRE F MIN	DAY		IN- IDENT MBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	76.	69.	5 29	15 4	64. 11.	4.93	23.68	2.56	33.68
FEB	70.	76.	69.	17 2	12 3	57. 15.	4.45	21.38	2.31	30.42
MAR	71.	76.	69.	12 3	12 4	74. 17.	4.93	23.68	2.56	33.68
APR	73.	76.	70.	30 9	12 4	80. 31.	4.77	22.91	2.48	32.60
MAY	75.	76.	70.	28 11	12 4	85. 38.	4.93	23.68	2.56	33.68
JUN	76.	77.	70.	27 17	13 5	88. 56.	4.77	22.91	2.48	32.60
JUL	76.	77.	70.	3 10	12 5	86. 57.	4.93	23.68	2.56	33.68
AUG	76.	77.		12	12 5	86. 52.	4.93	23.68	2.56	33.68
SEP	74.	77.	•	3	12 4	89. 41.	4.77	22.91	2.48	32.60
OCT	73.	76.		5	13 4	80. 30.	4.93	23.68	2.56	33.68
NOV	71.	76.		7	14 4	73. 17.	4.77	22.91	2.48	32.60
DEC	70.	76.		23		70. 1.	4.93	23.68	2.56	33.68
YEAR					-		58.02	278.77	30.15	396.61

BLDG 1720 - E.M. BARRACKS BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

	THE DET NO	COOLING INCLUDING ECONOMIZER	110110-11	OURS WHEN NOT MET OLING	MAXIMUM BTU HEATING	
MONTH JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	700 569 529 281 88 7 0 6 116 325 517 703 3841	13 44 119 291 504 657 712 702 528 271 96 11 3948	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	5722E+06 4927E+06 4902E+06 2903E+06 1771E+06 2836E+05 .0000 4310E+05 1565E+06 2611E+06 3915E+06 6209E+06	.3777E+06 .2429E+06 .1034E+06

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	242.52	.00	4.93	23.68	.75	33.68	17.1
FEB	182.39	.01	4.45	21.38	.68	30.42	17.1
MAR	146.89	.47	4.93	23.68	.75	33.68	26.7
APR	61.38	2.14	4.77	22.91	.73	32.60	28.7
MAY	15.38	4.32	4.93	23.68	.75	33.68	32.9
JUN	1.04	8.69	4.77	22.91	.73	32.60	38.9
JUL	.00	10.83	4.93	23.68	.75	33.68	41.4
AUG	.89	10.02	4.93	23.68	.75	33.68	36.2
SEP	20.26	6.44	4.77	22.91	.73	32.60	35.4
OCT	65.43	1.95	4.93	23.68	.75	33.68	29.0
NOV	131.57	.52	4.77	22.91	.73	32.60	25.5
DEC	240.18	.03	4.93	23.68	.75	33.68	17.1
YEAR	1107.91	45.42	58.02	278.77	8.83	396.61	41.4

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 77368. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720.I

BLDG 1720 - E.M. BARRACKS BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	WHEN LOADS MET HEAT	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	5722E+06
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.1076E+06	4927E+06
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.2729E+06	4902E+06
APR	2312.	1600.	1.000	55.	0.	0.	0	0	.3136E+06	2903E+06
MAY	2566.	1826.	1.000	65.	0.	0.	0	0	.3875E+06	1771E+06
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.5044E+06	2836E+05
JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.5727E+06	.0000
AUG	2280.	1840.	1.000	76.	0.	ο.	0	0	.5347E+06	4310E+05
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.5375E+06	1565E+06
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.3777E+06	2611E+06
		732.	1.000	47.	0.	0.	0	0	.2429E+06	3915E+06
NOV		604.	1.000	35.	0.	0.	0	3	.1034E+06	6209E+06
DEC	883.	004.	1.000	55.						

BLDG 1720 - E.M. BARRACKS NIGHT SETBACK (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

LAST CASE FLAG (1=YES, 0=NO) (LSTCS)

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA ----
*****REAL WEATHER FROM DISK*****
 FILE NAME MO
                          YEAR 1955
SITE LATITUDE DEG (AL1) 37.750000

ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
 STATION 13995
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01

2.000000E-01
 INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 190625.000000
 FLOOR AREA (SQFT) 22876.000000
 HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 620930.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -725350.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 228760.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 1348.000000
 INFILTRATION PROFILE
                                                                                                         1.00 1.00
                                                                                        .800
                                                                       .800
                                  .800
                 .800
                                                     .800
   .800
                                                                      1.00 1.00
                                                                                                         1.00
                                                                                                                           1.00
   1.00 1.00 1.00
                                                   1.00
                                                                      1.00
                                                                                      .800 .800 .800
                                                      1.00
                                    1.00
                  1.00
   1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 4.240000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
  C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-0
BUILDING THERMAL MASS MCP BTU/F (CMCP) 23702.360000
  BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 294.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 98.000000
WINDOW GLASS NUMBER (NG) 30
  DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
 WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

WALL DATA
1 2 3 4
400.00
180.00
-90.00
4236.0 4069.0 4236.0 4038.0
1179.0
1148.0 .0 1179.0
10.0 .0 10.0
117.9
00 0 0 0 0 0 0
00 0 0 0
```

MAX SOLAR WITH NO SHADE(SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .110	120.0 .137	120.0 .110	120.0 .138
WALL TRANSFER FUNCTIONS ON FACTORS	.00405	.00505	.00405 5	.00508 5
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00001 .00056	.00001 .00070 .00278	.00001 .00056 .00223	.00001 .00071 .00280
N=3 N=4 N=5	.00116	.00144	.00116 .00009 *****	.00145 .00011 *****
N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5 1.00000
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000 -1.71940 .84375	1.00000 -1.71940 .84375	-1.71940 .84375	-1.71940 .84375
N=3 N=4 N=5	09022 .00268	09022 .00268	09022 .00268 *****	09022 .00268 ******
ROOF AREA SQFT (AROF) 7721	.000000	0000m 02		
ROOF C TRANSFER FUNCTIONS (CNR)	3.4419	56E-02		
.193E-02 .199E-01 .120E-01	.540E-03	771.		
1.00600 .822E-01 SKYLIGHT TILT DEGREES (TILT)	0.000000 (AZSK)	9999.000		
SKYLIGHT HEIGHT FT (SKH)	OOOOOE+OO	,		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH	0.0000	000E+00	
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	SHSK) SHSK (MS) SHSK (MND,	D.OOOOOE+0 T,NDST) NDND) +00	1	1
DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	IR-F (SKYU -HR-F (SK ITERNAL SP) 1 YUN) ACE (FAP)	.292998 1.292998 1.80000	OE-01

-----INTERNAL GAINS AND PROFILES ------

THERMOSTAT SET POINT DEG F

	KW -		- BTU/HR - PEOPLE	PEOPLE		GOOT THE
	LIGHTS	PROCESS	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	16.	13093.				
HOUR	HO	URLY FRAC	TION OF PE	EAK		56.0
1001	.200	.300	1.000	1.000	69.0	76.0
7	.200	.300	1.000	1.000	69.0	76.0
2		.300	1.000	1.000	69.0	76.0
3	.200		1.000	1.000	69.0	76.0
4	.200	.300		1.000	69.0	76.0
5	.400	.300	1.000		69.0	76.0
6	.800	.500	1.000	1.000	· ·	76.0
7	1.000	.500	.600	.600	69.0	
=	.200	.300	.400	.400	69.0	76.0
8	•	.300	.100	.100	69.0	76.0
9	.200		.100	.100	69.0	76.0
10	.200	.300		.100	69.0	76.0
11	.200	.300	.100		69.0	76.0
12	.200	.300	.100	.100	09.0	,

13 14 15 16 17 18 19 20 21 22 23 24 NO HEATI	.200 .200 .200 .200 .400 .800 1.000 1.000 .500 .200 .200	.300 .300 .500 .600 .700 .900 .900 .900 .500 .300 .300 .31ENT TEMP	.100 .100 .100 .300 .500 .800 .900 .900 1.000 1.000 1.000 1.000	.100 .100 .300 .500 .800 .900 .900 1.000 1.000	69.0 69.0 69.0 69.0 69.0 69.0 69.0 69.0	76. 76. 76. 76. 76. 76. 76. 76.	0 0 0 0 0 0 0 0 0 0 0
SVSTEM T	YPE. (IECN)	:	2				
SUPPLY A	IR CFM (SACI	M) 3780	0.00000				
	ים מדת עדמתוווי	ויוי יויכו בחיד אווי יויכו בחיד	HK U.UU				
SYSTEM S	SUPPLY AIR ST	TOP TIME H	K 24 55.0	00000			
SYSTEM N	SUPPLY AIR S. MIXED AIR TER SIDE AIR FRAC	MP(IMAAIR)	ACEM (OAFR	0.00	0000E+00		
	FATOMOV (DDA)	NT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	COCOCETUL				
N MOM	T DDECCIPE '	TN WATER	(DP) I	. Z 3 U U U U E -	-01		
HEATING	PLANT RATED	INPUT BTU	(HFLIN)	776162.0	,0000		
HEATING	PLANT PART	LOAD VS FR	AC OF INPU	T TABLE	360 (PPH)	. 400	.451
.100	.191	.200	.286	.300	.305	• • • • • • • • • • • • • • • • • • • •	
.500	.537	.600	.625	.700	.718	.800	.812
.900	.906	1.00	1.00				
				205350	000000		
COOLING	TYPE (ITYPC PLANT RATED PLANT RATED	OUTPUT BI	U (CFLOT)	12006	.000000		
COOLING	PLANT RATED	INPUT BTU	AC EDYC BY	134070. TOP COP	(PLC)		
COOLING	PLANT PART	LOAD FRAC	250	.300	.310	.400	.370
.100	.200	.200	. 2 3 0		-		
500	.450	.600	.550	.700	.650	.800	.760
.900	.880	1.00	1.00				

BLDG 1720 - E.M. BARRACKS NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD 0. -162.	GAIN LOSS	33.	ROOF 0. -16.	PARTITN DOOR AND SLAB 010.	BSMT 0. 0.	-39.	-31.	-133.	o. o.
FEB	0. -117.	GAIN LOSS	44.	0. -13.	0. -9.	o. o.	0. -28.	0. -27.	0. -115.	0.
MAR	7. -88.	GAIN LOSS	54.	0. -12.	0. -8.	0. 0.	2. -20.	0. -25.	0. -106.	1. 0.
APR	34.33 -30.09	GAIN LOSS	57.65	.51 -7.55	.04 -4.87	.00	7.66 -8.64	.14 -15.26	.47 -62.02	3.67 .00
MAY	76.93 -5.18	GAIN LOSS	63.66	1.25 -5.01	.16 -2.93	.00	14.73 -2.39	.48 -8.87	1.42 -37.45	13.04
JUN	157. 0.	GAIN LOSS	63.	2. -3.	0. -1.	0.	22. 0.	1. -4.	5. -14.	54. O.
JUL	201.	GAIN LOSS	65.	3. -2.	1. -1.	0.	29. 0.	4. -3.	12. -9.	69. 0.
AUG	183. 0.	GAIN LOSS	58.	3. -2.	1. -1.	0. 0.	24. 0.	3. -3.	9. -9.	68. 0.
SEP	111. -8.	GAIN LOSS	49.	1. -4.	0. -2.	0. 0.	14. -3.	1. -7.	5. -27.	43. 0.
OCT	27.71 -29.78	GAIN	40.12	. 25	.06 -4.58	.00	3 77	.20	.64 -50.80	6.95
NOV	6.47		31.42	.01	.00 -6.49	.00	.78 -21.18	.00 -19.88	.00 -75.34	1.12 .00
DEC	0. -159.	GAIN LOSS	29.	0. -16.	0. -10.	0.	0. -39.	0. -30.	0. -126.	o. o.
TOT	806. -674.	GAIN LOSS	587.	11. -101.	3. -61.	0. 0.	119. -172.	10. -189.	33. -765.	260. 0.
MAX		LOAD=	± −62	2020		ከ ም ሮ 18	HOUR	8 A M	BIENT TE	EMP 1.

ZONE UA BTU/HR-F 4135.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720-2.I BLDG 1720 - E.M. BARRACKS NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTER	NAL S ERATU MAX	RE F	DAY H		IN- IDENT MBT.	LIGHTING THOUSAND · KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	69.	77.	68.	5 29	15 4	64. 11.	4.93	23.68	2.56	33.68
FEB	70.	77.	68.	17 2	13 3	59. 15.	4.45	21.38	2.31	30.42
MAR	71.	77.	68.	12 3	12 4	74. 17.	4.93	23.68	2.56	33.68
APR	73.	77.	69.	30 9	12 4	80. 31.	4.77	22.91	2.48	32.60
MAY	75.	77.	69.	28 11	12 4	85. 38.	4.93	23.68	2.56	33.68
JUN	76.	78.	69.	27 17	13 5	88. 56.	4.77	22.91	2.48	32.60
JUL	77.	78.	70.	3 10	12 5	86. 57.	4.93	23.68	2.56	33.68
AUG	76.	78.	69.	12 25	12 5	86. 52.	4.93	23.68	2.56	33.68
SEP	75.	78.	69.	3	12 4	89. 41.	4.77	22.91	2.48	32.60
OCT	73.	77.	69.	5	13 4	80. 30.	4.93	23.68	2.56	33.68
NOV	70.	77.	68.	7	14	73. 17.	4.77	22.91	2.48	32.60
DEC	69.	77.	68.	23	14 8	70.	4.93	23.68	2.56	33.68
YEAR			00.	. 10	J		58.02	278.77	30.15	396.61

	Exposed	Slab-					xposed F		Eeating	Adjacen
toom	Floor	Perimeter	Loss	Floor	Floor	Const		Cooling Temp	Temp	ROOM NO
umber	Number	Length	Coefficient	Area	U-Value	туре	Flag	Jemb	10mp	•
	1	36	.67							
	1	259	.67							
	1	120	.67					•		
	1	37	.67							
	1	169	.67							

CAF	1D 34 In	ternal Shadi	ng		Lockouts					
		Overall Shading Coefficent .58	BC		Visible Transmittance	Min	Max	Solar	Max	Glare Ctrl Prob

-----CARD 39-- System Alternative -----

Number Description

1 BLDG 1350 BASERUN FT LEONARD WOOD

CA	RD 40	System Type		AL VENTIL	ATION SYST		
System Set Number	System Type	Ventil Deck Location	Cooling SADBVh	Heating SADBVh	Cooling Schedule	Heating Schedule	Fan Static Pressure
1	υv						
2	UE						
3	SZ						
4	8Z						
5	8Z						

Set Ref #1 Ref #2 Ref #3 Ref #1 Number Begin End Begin	Number Begin End	System	nof	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#5
1 1 1 2 2 2	1 1 2 2 3 3 3 3 3 4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6						Begin	End	Begin	End	Begin	End	Begin	End
2 2	2 2 3 3 3													
	3 3													
3 3		:	2											
	. 4 4	1	3	3										

TRACE 600 input file D:\3204\TRACE\1350.TM by Trane Customer Direct Service Network

Alternative #1

Page #6

```
----CARD 42--- Fan SP and Duct Parameters-----
System Cool Heat Return Mn Exh Aux Rm Exh Cool Return Supply Supply Return
                 Fan Fan Fan Har Han Mtr Duct Duct Air
Set Fan Fan Fan
                                  Loc Loc Ht Gn Loc
                                                          Path
                        SP SP
Number SP SP SP
                   SP
                                                    OTHER ROOMDK
                                  OMIT
                   2.25
    1.75 1.75
1
                                                    OTHER ROOMDK
     0.6 0.6
2
                                                    OTHER DUCTED
                                  OMIT
     2.5 2.5
3
                                                    OTHER ROOMDK
                                   TIMO
     2.0 2.0
                                                     OTHER DUCTED
                                   TIMO
     3.0 3.0
```

System Minimum Maximum Minimum
CA	RD 45 E	Equipment Sch	edules				Main			Auxiliary
System			Direct	Indirect Evap	Auxiliary	Main Heating	Preheat	Reheat	Mech.	Heating
Set	Cooling		Evap Coil	Coil	Coil	Coil	Coil	Coil	Humidity	Coil
Number	Coil	Economizer		OFF	OFF	AVAIL	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	OFF	OFF	AVAIL	OFF	OFF	OFF	OFF
2	OFF	OFF	OFF		OFF	AVAIL	OFF	OFF	OFF	OFF
3	WANIT	AVAIL	OFF	OFF	OFF	AVAIL	OFF	OFF	OFF	OFF
4	OFF	OFF	OFF	OFF		AVAIL	OFF	OFF	OFF	OFF
5	AVAIL	AVAIL	OFF	OFF	OFF	WANTE	011			

	-CARD	47	Fan	Override	s							
										MAIN CO	DLING FAN-	
-							Sys Fan	Mech	Air	Air	Size	
				Fan		Fan	•		Value	Units	Meth	Confq
Num	Eff	Eff	Eff	Eff	Eff	Eff	Eff	Eff	Value	0112.00		•
1												

```
-----CARD 49-- Heating Capacity Overrides -----
System ---MAIN HEATING--- ----PREHEAT----- ----REHEAT----- ---HUMIDIFICATION-- ---AUX HEATING----
     Capacity Capacity Capacity Capacity Capacity Capacity Capacity Capacity Capacity
Set
                                               Value Units Value
                                       Units
                                 Value
                 Value Units
           Units
Number Value
                                        MBH
                         мвн
                                 0
           MBH
                   0
     278.9
1
                                        MBH
                                 0
                         MBH
                   0
2
                         MBH
                                 0
                                        MBH
                0
           MBH
     87.15
3
                                        MBH
                         MBH
                                 0
                   0
                                        MBH
                          MBH
                                0
  113.15 MBH
```

----- Equipment Section Alternative #1 -----

```
----CARD 59-- Equipment Description / TOD Schedules -----
Elec Consump Elec Demand Demand
Alternative Time of Day Time of Day Limit
Number Schedule Schedule Max KW Alternative Description
```

Number Schedule Schedule Max KW Alternative Description
BLDG 1350 BASERUN FT LEONARD WOOD

Page #8

```
----CARD 62-- Cooling Equipment Parameters -----
Cool Equip Num ------COOLING-------HEAT RECOVERY------
             --Capacity-- ----Energy---- ---Energy----
                                                            Order Seq Limit
                                               Value Units Num Type Number
        Of
                        Value Units Value Units
Num Name Units Value Units
                        .93 KW-TON
1 EQ1170S 1 10 TONS
                      .94 KW-TON
             15 TONS
2 EQ1170S 1
----CARD 65-- Heating Load Assignment
Assignment Loads To -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Reference Heating Ref Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End
       1 1 5
----CARD 67-- Heating Equipment Parameters
                                      Energy Seq
                                                       Switch
           Number HW Pmp
Heat Equip
                                                  Order over Hot Misc.
                                                                        Limit
                                      Rate
           Of Full Ld
                            Cap'y
           Units Value Units Value Units Value Units Number Control Strg Acc. Cogen Number
 Ref
     Code
 Number Name
                           658 MBH
                                      80 PCTEFF
     EQ2001 1 1.492 KW
 -----CARD 69-- Fan Equipment Parameters -----
 System
                                           Optional
       Cooling Heating Return Exhaust Auxiliary Room
 Set
                                Supply Exhaust Ventilation
                          Fan
                    Fan
     Fan
              Fan
 Number
             EQ4003
      EQ4003
              EQ4381
       EQ4381
 2
       EQ4003
              EQ4003
 3
        EQ4003
              EQ4003
 4
              EQ4003
        EQ4003
```

CARD 70 Fan Equipment KW Overrides												
MAIN SYSTEM					ER SYS			EMAND	LIMIT	PRIORI	TY	
System				Exh	Aux	Room	Opt				Room	Opt
Set			Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent
	KW	KW.	KW	KW	KW.	κw	KW	Fan	Fan	Fan	Fan	Fan
Number	V.W	V.M	7/4	244	••••							
1	2.238	2.238										
2	.187	.187										
3	2.238	2.238										
4	2.238	2.238										
5	3.73	3.73										

```
------
   Schedules:
       AVAIL AVAILABLE (100%)
       CDDC78SM CLG DDC T-STAT AT 78 (MAY THRU SEPT)
       CLG75SUM COOLING TSTAT AT 75 (MAY THRU SEPT)
        CSB75SUM COOLING SE TSTAT AT 75 (MAY THRU SEPT)
        E-1350Z1 EQUIPMENT SCHEDULE - BLDG 1350 ZONE 1
        E-1350Z2 EQUIPMENT SCHEDULE - BLDG 1350 ZONE 2
        E-1350Z3 EQUIPMENT SCHEDULE - BLDG 1350 ZONE 3
        E-1350Z4 EQUIPMENT SCHEDULE - BLDG 1350 ZONE 4
        E-1350Z5 EQUIPMENT SCHEDULE - BLDG 1350 ZONE 5
        FL-INSHD INTERNAL SHADING: VENITIAN BLINDS
        HDDC65WT HEATING DDC T-STAT AT 65 (OCT TO APR)
        HDDC68WT HEATING DDC T-STAT AT 68 (OCT TO APR)
        HSB67WNT HEATING SE T-STAT AT 67 (OCT TO APR)
        HSE70WHT HEATING SE T-STAT AT 70 (OCT TO APR)
        HTG67WNT HEATING T-STAT AT 67 (OCT TO APR)
        HTG70WNT HEATING T-STAT AT 70 (OCT TO APR)
        L-1350Z1 LIGHTING SCHEDULE - BLDG 1350 ZONE 1
        L-1350Z2 LIGHTING SCHEDULE - BLDG 1350 ZONE 2
        L-1350Z3 LIGHTING SCHEDULE - BLDG 1350 ZONE 3
         L-1350Z4 LIGHTING SCHEDULE - BLDG 1350 ZONE 4
         L-1350Z5 LIGHTING SCHEDULE - BLDG 1350 ZONE 5
         OFF ALWAYS OFF
         P-1350Z1 LIGHTING SCHEDULE - BLDG 1350 ZONE 1
         P-1350Z2 PEOPLE SCHEDULE - BLDG 1350 ZONE 2
         P-1350Z3 PEOPLE SCHEDULE - BLDG 1350 ZONE 3
         P-1350Z4 PEOPLE SCHEDULE - BLDG 1350 ZONE 4
         P-1350Z5 PEOPLE SCHEDULE - BLDG 1350 ZONE 5
    System:
         SZ SINGLE ZONE
         UH UNIT HEATERS
         UV UNIT VENTILATOR
     Equipment:
         Cooling:
              EQ1170S AIR-CLD COND COMP <20 TONS
         Heating:
              EQ2001 GAS FIRE TUBE HOT WATER
         Pan:
              EQ4003 FC CENTRIF. FAN C.V.
```

EQ4381 PROPELLER FAN

Utility Description Reference Table

Page #32

Schedule Name: AVAIL Project: AVAILABLE (100) Location: Client:

Program User: Comments:

Starting Month: JAN Ending Month: HTG Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent ٥ 100

Page #33

Schedule Name: CDDC78SM

Project: CLG DDC T-STAT AT 78 (MAY THRU

Location:

Client:

Program User:

Comments: CLG DDC T-STAT AT 78 (MAY THRU

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 90

6 78

19 90

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

Page #34

TRACE 600 input file D:\3204\TRACE\1350.TM by Trane Customer Direct Service Network

Schedule Name: CLG75SUM

Project: COOLING TSTAT AT 75 (MAY THRU S

Location:

Client:

Program User:

Comments: COOLING TSTAT AT 75 (MAY THRU

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

----75

0 24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature ----

> 100 0

Page #35

Schedule Name: CSB75SUM

Project: COOLING SB TSTAT AT 75 (MAY THR

Location: Client:

Program User:

Comments: COOLING SB TSTAT AT 75 (MAY TH

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

----0 75 6 19 90

24

Starting Month: OCT Ending Month: DEC starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

100 0

Schedule Name: E-1350Z1

Project: EQUIPMENT SCHEDULE - BLDG 1350

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.
Comments: EQUIPMENT SCHEDULE - KITCHEN

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
5	80
6	90
7	60
8	10
11	90
12	во
13	10
16	90
17	80
18	10
24	

•

Page #37

Schedule Name: E-1350Z2

Project: EQUIPMENT SCHEDULE - BLDG 1350

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - SHIPPING

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	0
7	100

0 21

24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Bour Util Percent ----0 0

Page #38

TRACE 600 input file D:\3204\TRACE\1350.TM by Trane Customer Direct Service Network

Schedule Name: E-1350Z3

Project: EQUIPMENT SCHEDULE - BLDG 1350

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: EQUIPMENT SCHEDULE - CLASSROO

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent ----0

24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 50

Schedule Name: E-1350Z4

Project: EQUIPMENT SCHEDULE - BLDG 1350

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - ASSEMBLY

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	50
5	90
8	50
11	90
13	50
16	90
18	50
24	

Schedule Name: E-1350Z5

Project: EQUIPMENT SCHEDULE - BLDG 1350

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: EQUIPMENT SCHEDULE - ADMIN. OF

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	10
7	90
11	70
12	60
13	90
16	30
21	10
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent 10 0 24

```
Schedule Name: FL-INSHD
Project: INTERNAL SHADING: VENITIAN BLIN
```

Location: FT LEONARD WOOD

Client: US ARMY Program User: EMC ENGINEERS, INC. Comments: INTERNAL SHADING SCHEDULE

Starting Month: JAN Ending Month: APR Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent 0 75 24

Starting Month: MAY Ending Month: SEP Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent ----0 35

24

Starting Month: OCT | Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent ----75 0

24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent 0 25 24

Schedule Name: HDDC65WT

Project: HEATING DDC T-STAT AT 65 (OCT T

Location: Client:

Program User:

Comments: HEATING DDC T-STAT AT 65 (OCT

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0	55
6	65
10	55

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 55 6 65

19 55

Page #43

Schedule Name: EDDC68WT

Project: HEATING DDC T-STAT AT 68 (OCT T

Location:

Client:

Program User:

Comments: HEATING DDC T-STAT AT 68 (OCT

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

6 68

19 55

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 55

6 68

19 55

Schedule Name: HSB67WNT

Project: HEATING SB T-STAT AT 67 (OCT TO

Location:

Program User:

Comments: HEATING SB T-STAT AT 67 (OCT T

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature 55 0 6 67 55 19

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature ----0 35 24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature 55 0 67 6 19

Page #45

Schedule Name: ESE70WNT

Project: HEATING SB T-STAT AT 70 (OCT TO

Location:

Client:

Program User:

Comments: HEATING SB T-STAT AT 70 (OCT T

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Temperature

0	55

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSCN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 55

6 70

19 55

Page #46

TRACE 600 input file D:\3204\TRACE\1350.TM by Trane Customer Direct Service Network

Schedule Name: ETG67WNT

Project: HEATING T-STAT AT 67 (OCT TO AP

Location:

Client:

Program User:

Comments: HEATING T-STAT AT 67 (OCT TO A

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 67

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 67

Page #47

Schedule Name: ETG70WNT

Project: HEATING T-STAT AT 70 (OCT TO AP

Location: Client:

Program User:

Comments: HEATING T-STAT AT 70 (OCT TO A

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 70

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 70

24

Schedule Name: L-1350Z1

Project: LIGHTING SCHEDULE - BLDG 1350 Z

Location: PT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHTING SCHEDULE - KITCHEN

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
5	100
8	10
11	100
13	10
16	100
18	10
24	

Page #49

Schedule Name: L-1350Z2

Project: LIGHTING SCHEDULE - BLDG 1350 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHTING SCHEDULE - SHIPPING

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	UT1.	re	rcent

٥	10
7	100
11	80
13	100
21	10

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 10

Schedule Name: L-1350Z3

Project: LIGHTING SCHEDULE - BLDG 1350 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHTING SCHEDULE - CLASSROOM

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percen
0	10
7	100
11	50
12	40
13	100
16	40
21	10
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent 0 10 24

Page #51

Schedule Name: L-1350Z4

Project: LIGHTING SCHEDULE - BLDG 1350 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHTING SCHEDULE - ASSEMBLY H

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percen	t
------------------	---

o	10
7	100
20	10

Schedule Name: L-1350Z5

Project: LIGHTING SCHEDULE - BLDG 1350 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHTING SCHEDULE - ADMIN. OFF

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	10
7	100
11	80
12	50
13	100
16	50
21	10
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent ----10 0 24

Page #53

Schedule Name: OFF Project: ALWAYS OFF Location:

Program User: Comments:

Starting Month: JAN Ending Month: BTG Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 0

Schedule Name: P-1350Z1
Project: PEOPLE SCHEDULE - BLDG 1350 ZON
Location: PT LEONARD WOOD, MO
Client: US ARMY
Program User: EMC ENGINEERS, INC.
Comments: PEOPLE SCHEDULE - KITCHEN

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	0
5	100
8	0
11	100
13	0
16	100
18	. 0
24	

Page #55

Schedule Name: P-1350Z2

Project: PEOPLE SCHEDULE - BLDG 1350 ZON

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: PEOPLE SCHEDULE - SHIPPING

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	0
7	100
11	50
13	100
21	0
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent 0 0 24

Page #56

Schedule Name: P-1350Z3 Project: PEOPLE SCHEDULE - BLDG 1350 ZON Location: FT LEONARD WOOD, MO Client: US ARMY Program User: EMC ENGINEERS, INC. Comments: PEOPLE SCHEDULE - CLASSROOMS

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: WKDY

lour	Util Percen
0	0
7	100
11	30
12	20
13	100
16	20
21	0
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent ----0 0 24

Schedule Name: P-1350Z4

Project: PEOPLE SCHEDULE - BLDG 1350 ZON

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: PEOPLE SCHEDULE - ASSEMBLY HAL

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	0
7	100
8	60
9	30
11	60
12	100
13	30
15	50
16	100
17	40
18	20
21	0

Schedule Name: P-1350Z5

Project: PEOPLE SCHEDULE - BLDG 1350 ZON

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: PEOPLE SCHEDULE - ADMINISTRATI

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	0
7	100
11	80
12	50
13	100
16	20
21	0
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	0
24	

PAGE 1

********************************* TRACE 600 ANALYSIS ** ** ** *************** **********************************

EEAP STUDY, EXPANSION OF EMCS FT. LEONARD WOOD, MO US ARMY E M C ENGINEERS, INC.

Weather File Code:

Location:

SPRINGFM

Latitude:

SPRINGFIELD, MISSOURI 37.0 (deg)

Longitude:

93.0 (deg)

Time Zone:

6

Elevation:

1,265 (ft)

Barometric Pressure:

28.5 (in. Hg)

Summer Clearness Number:

0.97 0.97

Winter Clearness Number:

Summer Design Dry Bulb:

94 (F)

Summer Design Wet Bulb:

78 (F)

Winter Design Dry Bulb:

3 (F)

Summer Ground Relectance:

0.20

Winter Ground Relectance:

0.20

Air Density:

0.0724 (Lbm/cuft)

Air Specific Heat:

0.2444 (Btu/lbm/F)

Density-Specific Heat Prod: 1.0621 (Btu-min./hr/cuft/F)

Latent Heat Factor: 4,675.1 (Etu-min./hr/cuft)

Enthalpy Factor:

4.3449 (Lb-min./hr/cuft)

Design Simulation Period: May To September System Simulation Period: January To December Cooling Load Methodology:

TETD/Time Averaging

Time/Date Program was Run:

13:24: 7 3/16/93

Dataset Name:

1350 .TM

AIRFLOW - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

Main							Auxil.	Room	
		Outside	Cooling	Heating	Return	Exhaust	Supply	Exhaust	
System	System	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	
Number	Туре	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	
1	υv	3,036	0	4,686	4,776	3,126	0	o	
2	UH	0	0	1,480	0	438	0	0	
3	sz	600	3,080	3,080	3,294	3,080	0	0	
4	sz	660	0	3,720	3,870	810	0	0	
5	sz	380	3,800	3,800	4,096	3,800	0	0	
Totals		4,676	6,880	16,766	16,036	11,254	0	0	

CAPACITY - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

------SYSTEM SUMMARY --------(Design Capacity Quantities)

			Coo	ling					Heating			
		Main Sys.	Aux. Sys.	Opt. Vent	Cooling	Main Sys.	Aux. Sys.	Preheat	Reheat	Humidif.	Opt. Vent	Heating
System	System	Capacity	Capacity	Capacity	Totals	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Totals
Number	Туре	(Tons)	(Tons)	(Tons)	(Tons)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)
1	υv	0.0	0.0	0.0	0.0	-278,900	0	0	o	0	0	-278,900
2	UE	0.0	0.0	0.0	0.0	-108,332	0	0	0	0	0	-108,332
3	8 2	10.1	0.0	0.0	10.1	-87,150	0	0	0	0	0	-87,150
4	sz	0.0	0.0	0.0	0.0	-67,708	0	0	0	0	0	-67,708
5	sz	13.0	0.0	0.0	13.0	-113,150	0	0	0	0	0	-113,150
Totals		23.1	0.0	0.0	23.1	-655,240	0	0	0	0	0	-655,240

The building peaked at hour 15 month 7 with a capacity of 22.1 tons

ENGINEERING CHECKS - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

----- ENGINEERING CHECKS-----

			Percent		Cool:	ing	Hea			
System	Main/	System	Outside	Cfm/	Cfm/	8q Ft	Btuh/	Cfm/	Btuh/	Floor Area
Number	Auxiliary	Туре	Air	Sq Pt	Ton	/Ton	Sq Ft	Sq Ft	Sq Ft	Sq Ft
1	Main	υv	64.79	0.00	0.0	0.0	0.00	7.23	-430.40	648
2	Main	UH	0.00	0.00	0.0	0.0	0.00	0.31	-22.91	4,728
3	Main	8Z	19.48	0.71	306.2	433.2	27.70	0.71	-20.00	4,357
4	Main	8Z	17.74	0.00	0.0	0.0	0.00	1.67	-30.34	2,232
5	Main	8Z	10.00	0.67	291.9	438.8	27.35	0.67	-19.81	5,712

System 1 Block UV - UNIT VENTILATOR

Peaked at	- Time =	= >	Mo/Hr:	0/0			*	Ma	/Hr:	0/0 *		Mo/Hr: 13,	/ 1	
Outside Air ==>			DB/WB/HR:	0/ 0/ 0.1	0		*		DADB:	0 *			3	
							*			*				
		Space	Ret. Air	Ret. Air		Percnt			pace	Percnt *	Space Peal			Percnt
		Sens.+Lat.	Sensible	Latent	Total			Sens:		Of Tot *	Space Sen			Of Tot
Envelope	Loads	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(*)	*	(B	tuh)	(*) *	(Btuh		•	(%)
Skylite	Solr	0	0		D	0.00			0	0.00 *		0	0	0.00
Skylite	Cond	0	0		. 0	0.00	*		0	0.00 *			0	0.00
Roof Co	ond	0	0		0	0.00	*		0	0.00 *	-1,08			0.46
Glass &	olar	0	0		0	0.00	*		0	0.00 *		-	0	0.00
Glass C	ond	0	0		0	0.00	*		0	0.00 *	-26		263	0.12
Wall Co	nđ	0	0		0	0.00	*		0	0.00 *	-5,97			2.63
Partiti	.on	О			0	0.00	*		0	0.00 *)	0	0.00
Exposed	Floor	0			0	0.00	*		0	0.00 *	-1,61			0.71
Infiltr	ation	0			0	0.00	*		0	0.00 *	-6,40			2.82
Sub Tot	al==>	o	0		0	0.00	*		0	0.00 *	-15,34	3 -15,	143	6.76
Internal	Loads						*			*				
Lights		0	0		0	0.00	*		0	0.00 *		0	0	0.00
People		0			0	0.00	*		0	0.00 *		0	0	0.00
Misc		0	0	0	0	0.00	*		0	0.00 *	1	0	0	0.00
Sub Tot	al==>	О	0	0	0	0.00	*		0	0.00 *		0	0	0.00
Ceiling L	oad	0	0		0	0.00	*		0	0.00 *	1	0	0	0.00
Outside A		0	0	0	0	0.00	* (0	0.00 *		-216,	138	95.22
Sup. Fan		_			0	0.00	, *			0.00 *		4,	199	-1.98
Ret. Fan			0		0	0.00) *			0.00 *			0	0.00
Duct Heat			0		o	0.00) *			0.00 *			0	0.00
DV/UNDR S	-	0			0	0.00			0	0.00 *		0	0	0.00
Exhaust H	_	•	0	0	0	0.00	, *			0.00 *			0	0.00
rerminal			0	0	0	0.00	, *			0.00 *			0	0.00
			•				*			*				
Grand Tot	al=*>	0	0	0	0	0.00	*		0	0.00 *	-15,34	3 -226,	183	100.00
- 			coo	LING COIL S										
	Total	Capacity	_	Coil Airfl		ng DB/WE			-	e/we/hr	Gross Tota		8 (8f)) (%)
	(Tons)	(Mbh)	(Mbh)	(cfm)	•	-	ins	Deg F	Deg F		Floor	648		
ain Clg	0.0		0.0	0			0.0	0.0	0.0		Part	0		
ux Clg	0.0	0.0	0.0	0		0.0	0.0	0.0	0.0		ExFlr	36		
pt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	648		0 (
otals	0.0	0.0									Wall	765		6 :
	HEATI	NG COIL SEL	ECTION		лі	RFLOWS ((cfm)			ENGINEERING		Tempera		
	Capaci	ty Coil A	irfl Ent	Lvg	Туре	Cooling	;	Reating		g % OA	0.0	Туре	Clg	Htg
	(Mbh) (cf:	m) Deg F	Deg F	Vent	c		3,036		g Cfm/Sqft	0.00	EADB	0.0	
ain Htg	-278	.9 4,	686 17.0	73.1	Infil	ď		90		g Cfm/Ton	0.00	Plenum	0.0	
ux #tg	0	.0	0 0.0	0.0	Supply	c)	4,685		g Sqft/Ton	0.00	Return	0.0	
reheat	-0	.0 4,	686 27.5	0.0	Mincfm	C)	0		g Btuh/Sqft		Ret/OA	0.0	
eheat	0	.0	0 0.0	0.0	Return	c	•	4,685		. People	0	Runarnd	0.0	
umidif	0	.0	0 0.0	0.0	Exhaust	c)	3,036	脏t	g % OA	64.8	Fn MtrTD	0.3	0.
pt Vent	0	.0	0.0	0.0	Rm Exh	c)	0	复t	g Cfm/SqFt	7.23	Fn BldTD	0.2	
otal	-278	_			Aux11	c		0		g Btuh/SqFt		Fn Frict	0.7	0.

by. Italia customer birect bervice nativer

System 2 Block UH - UNIT HEATERS

Mo/Hr: 0/ 0 Mo/Hr: 13/ 1 Peaked at Time ==> Mo/Hr: 0/ 0 OADB: 3 OADB: 0 Outside Air ==> OADB/WB/HR: 0/ 0/ 0.0 Net Percnt * Percnt * Space Peak Coil Peak Percnt Space Ret. Air Ret. Air Space Of Tot Of Tot * Tot Sens Sensible Latent Total Of Tot * Sensible Space Sens Sens.+Lat. (%) * (Btuh) (%) (%) * (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) Envelope Loads 0.00 * 0.00 * 0 0.00 0 Skylite Solr 0 0 0 0.00 * 0 0 0.00 0.00 * 0 Skylite Cond 0 0 0 0.00 * -38,430 -38,430 35.47 0.00 * 0 0 0 Roof Cond 0 0 0.00 0.00 * 0 0 0.00 * 0 Glass Solar 0 0.00 * 0 0.00 * -1,507 -1.507 1.39 0 0 Glass Cond -28.149 25.98 0.00 * -28,149 0 0 0.00 * 0 Wall Cond 0 0 0.00 0 0.00 * 0 0.00 * Partition 0.00 * 0 0.00 * -11,106 -11,106 10.25 Exposed Floor 0 0 0.00 * -29,772 -29,772 27.48 0 0.00 0 Infiltration 0 100.58 0.00 * -108,963 -108,963 0.00 0 Sub Total ==> 0 0 Internal Loads 0.00 0.00 * 0.00 * 0 0 0 0 0 Lights 0.00 * 0.00 * 0 0 0.00 0 n People 0 0.00 * 0 0 0.00 0.00 * 0 Misc 0 0 0 0.00 0 0.00 * 0.00 * O 0 0 Sub Total ==> 0 0 0.00 0 0.00 * 0 0.00 * 0 0 Ceiling Load 0.00 * 0 0 0.00 0 0 0.00 * Outside Air 631 -0.58 0.00 * 0.00 * 0 Sup. Fan Heat 0.00 * 0 0.00 0.00 * Ret. Fan Heat D O 0.00 * 0 0.00 0 0.00 * Duct Heat Pkup 0 0.00 * 0 0 0.00 0 0.00 * OV/UNDR Sizing 0.00 0 0.00 0.00 * 0 0 0 Exhaust Heat 0.00 0 0.00 * 0.00 * Terminal Bypass 0 0.00 * -108,963 -108,332 100.00 Grand Total==> 0 0 0 0.00 *

COOLING COIL SELECTION												AREAS					
	Total Ca	apacity	Sens Cap.	Coil Airfl	Ent	ering DB	/WB/HR	Lea	ving DB	/WB/HR	Gross To	tal Glas	s (sf)	(\$)			
	(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F	Deg F	Grains	Deg F	Deg F	Grains	Floor	4,728					
Main Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Part	5,700					
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	259					
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	4,728		0 0			
Totals	0.0	0.0									Wall	3,752	:	36 1			
	HEATING	COIL SEL	ECTION			-AIRFLOW	S (cfm)	E	NGINEERING	CHECKS	TEMPERI	TURES	(F)			
	Capacity	Coil A	irfl Ent	Lvg	Туре	Cool	ing	Heating	Clg	% OA	0.0	Туре	Clg	Ħtg			
	(Mbh)	(cf	m) Deg	F Deg F	Vent		0	0	Clg	Cfm/Sqft	0.00	SADB	0.0	136.3			
Main Htg	-108.3	1,	480 67.	4 136.3	Infil		0	438	Clg	Cfm/Ton	0.00	Plenum	0.0	67.0			
Aux Htg	0.0		0 0.	0.0	Supply		0	1,480	Clg	Sqft/Ton	0.00	Return	0.0	67.0			
Preheat	0.0		0 0.	0.0	Mincfm		0	0	Clg	Btuh/Sqft	0.00	Ret/OA	0.0	67.0			
Reheat	0.0		0 0.	0.0	Return		0	1,480	No.	People	0	Runarnd	0.0	67.0			
Humidif	0.0		0 0.	0.0	Exhaust		0	0	Htg	% OA	0.0	Fn MtrTD	0.1	0.1			
Opt Vent	0.0		0 0.	0.0	Rm Exh		0	0	Htg	Cfm/SqFt	0.31	Fn BldTD	0.1	0.1			
Tota1	-108.3				Auxil		0	0	Htg	Btuh/SqFt	-22.91	Fn Frict	0.2	0.2			

System 3 Peak SZ - SINGLE ZONE

Peaked at Ti	D0 ==>		Mo/Er:	7/15			*	Mo/H	lr: 7,	/15 *		Mo/Hr: 13	/ 1	
Outside Air		OADB	/WB/HR: 9	94/ 78/124.0)		*	OAD	B: 9	4 *		OADB:	3	
							*	8		* Percnt *	Space Pea	k Coil F	osk.	Percn
	Sens.+1	pace	Sensible	Ret. Air Latent		Percnt Of Tot		Spa Sensib		Of Tot *	Space Sen			Of To
			(Btuh)	(Btuh)	(Btuh)	(%)		(Btu		(%) *	(Btuh		uh)	(%)
Envelope Load	•	tuh) O	(2011)	(Bcan)	(25411)			(200	0	0.00 *	-	0	Ó	0.0
Skylite So: Skylite Co:		0	0		0				0	0.00 *		0	0	0.00
Roof Cond		,418	0		7,418			7,4	18	12.95 *	-7,29	8 -7,	298	8.86
Glass Sola		,360	0		3,360			3,3		5.87 *		0	0	0.00
Glass Cond		799	0		799			•	99	1.39 *	-3,06	4 -3,	064	3.72
Wall Cond	2	, 346	0		2,346			2,3	46	4.10 *	-12,78	1 -12,	781	15.52
Partition	-	0	·		0			•	0	0.00 *		0	0	0.00
Exposed Flo	NO.T	0			0				0	0.00 *	-5,38	7 -5,	387	6.54
Infiltratio		,673			11,673			4,3	18	7.54 *	-15,22	8 -15,	228	18.49
Sub Total=		,596	0		25,596			18,2		31.85 *	-43,75	7 -43,	757	53.14
		, 590	·		25,550	20.00	*			*				
Internal Load		.086	0		27,086	24.87	*	27,0	86	47.29 *		0	0	0.00
Lights		•	·		19,200			11,7		20.53 *		0	0	0.00
People	19	,200	0	o	192			•	92	0.33 *		0	0	0.00
Misc		192	0	-	46,477			39,0		68.15 *		0	0	0.00
Sub Total=	•> 46	,4 77 0	0	Ū	0				0	0.00 *		0	0	0.00
Ceiling Load		0	0	0	32,728				0	0.00 *		0 -42,	695	51.85
Outside Air		U	U	·	4,107				_	0.00 *		4,	107	-4.99
Sup. Fan Heat			0		0,107					0.00 *			0	0.00
Ret. Fan Beat			0		0					0.00 *			О	0.00
Duct Beat Pki	•	0	U		0				0	-0.00 *		o	0	0.00
OV/UNDR Sizi	ıg	U	0	0	0				•	0.00 *			0	0.00
Exhaust Heat			0		0					0.00 *			0	0.00
Terminal Bypa	188		U	V	·	0.00	*							
Grand Total=	-> 72	,073	0	0	108,907	100.00	*	57,2	278	100.00 *	-43,75	7 -82,	346	100.00
			coo	LING COIL SE	ELECTION							areas		
T	otal Capac			Coil Airfl		ng DB/WE				/WB/ER	Gross Tota	1 Glas	s (sf) (%)
(T	ons) (M	bh)	(Mbh)	(cfm)	Deg F De	g F Gra	ins	Deg F I	eg F	Grains	Floor	4,357		
lain Clg	10.1 1	20.7	81.5	3,080	78.7 6	6.4	12.6	56.2	53.6	60.0	Part	7,520		
ux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	120		
pt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	4,357		0 (
otals	10.1 1	20.7									Wall	1,722		70 4
	EATING COI	L SELEC	rion		AI	RFLOWS ((cfm)		E	NGINEERING	CHECKS	Temperi		•
Ca	pacity C	oil Air	fl Ent	Lvg	Туре	Cooling	7	Beating	Clg	% OA	19.5	Type	Clg	Htg
	(Mbh)	(cfm)	Deg F	Deg F	Vent	600)	600		Cfm/Sqft	0.71	SADB	57.5	
ain Etg	-87.2	3,08	0 55.5	82.1	Infil	214	1	214	_	Cfm/Ton	306.21	Plenum	75.0	
ux Htg	0.0	4	0.0	0.0	Supply	3,080	י	3,080	-	Sqft/Ton	433.17	Return	75.0	
reheat	-0.0	3,08	0 56.9	56.2	Mincfm	C	ס	0	-	Btuh/Sqft		Ret/OA	78.7	
	0.0		0.0	0.0	Return	3,080)	3,080	No.	People	48	Runarnd	75.0	
leheat	0.0													
leheat Lumidif	0.0	(o.o o o.o		Exhaust Rm Exh	600		600 0	_	% OA Cfm/SqFt	19.5 0.71	Fn MtrTD Fn BldTD	0.4	

Total

-67.7

SZ - SINGLE ZONE Peak System

Mo/Hr: 0/0 * Mo/Hr: 13/ 1 Peaked at Time ==> Mo/Hr: 0/0 OADB: 3 OADB: 0 Outside Air ==> OADB/WB/HR: 0/ 0/ 0.0 Percnt * Space Peak Coil Peak Percnt Net Percnt * Space Ret. Air Ret. Air Space Tot Sens Of Tot Latent Total Of Tot * Sensible Of Tot * Space Sens Sens.+Lat. Sensible (%) * (Btub) (Btuh) (%) (Btuh) (%) * (Btuh) Envelope Loads (Btuh) (Btuh) (Btuh) 0.00 * 0 0.00 0.00 * 0 0 0 0 Skylite Solr 0 0.00 * 0 0.00 * 0 0.00 0 0 0 0 Skylite Cond -3,739 5.52 0.00 * 0.00 * -3,739 0 Roof Cond 0 0 0 0.00 * 0 0 0.00 0.00 * Glass Solar 0 0 0 0 0.00 * -263 -263 0.39 0.00 * 0 Glass Cond 0 0 0 -8.375 -8,375 12.37 0.00 * 0.00 * 0 Wall Cond 0 0 0.00 * 0 0 0.00 0.00 * 0 0 Partition -1,661 -1,661 0.00 * 0 0.00 * 0 Exposed Floor 0 -10,674 -10,674 15.76 0.00 * 0 0.00 * 0 Infiltration 0.00 * ~24,711 -24.711 36.50 0.00 * Sub Total ==> 0 0 0 Internal Loads 0.00 * 0 0.00 0.00 * ٥ 0 0 Lights 0 0.00 * 0.00 0 0 0.00 * 0 0 People 0 0.00 0.00 * 0.00 * 0 0 0 0 0 Misc 0.00 * 0.00 0.00 * 0 0 0 0 0 Sub Total==> 0.00 * 0 0.00 0.00 * 0 0 Ceiling Load 0 0 0 69.36 0.00 * ٥ -46,965 0.00 * 0 Outside Air 0 0 0 3.968 -5.86 0.00 * 0.00 * Sup. Fan Heat 0.00 * 0 0 0.00 * Ret. Fan Heat 0 0.00 0.00 * 0.00 * n Duct Heat Pkup ٥ 0 -0.00 0.00 * 0.00 * 0 0 OV/UNDR Sizing 0.00 0.00 * 0.00 * 0 0 0 O Exhaust Heat 0.00 0.00 * O 0 0.00 * 0 Terminal Bypass 0 -67,708 100.00 0.00 * -24,711 0.00 * 0 Grand Total==> 0 0 0 Gross Total Glass (sf) (%) Leaving DB/WB/HR Total Capacity Sens Cap. Coil Airfl Entering DB/WB/HR Deg F Deg F Grains Deg F Deg F Grains Floor 2,232 (Mbh) (Tons) (Mbh) (cfm) 0.0 Part 1,610 0.0 0.0 0.0 0.0 Main Clg 0.0 0.0 0.0 0 37 0.0 0.0 0.0 0.0 ExFlr 0.0 0.0 0.0 0.0 Aux Clq 0.0 0 0.0 0.0 Roof 2,232 0.0 0.0 0.0 0.0 0.0 Opt Vent 0.0 1,043 1 Wall Totals 0.0 0.0 --TEMPERATURES (F)-----ENGINEERING CHECKS-------AIRFLOWS (cfm)------------HEATING COIL SELECTION-----Heating Clg % OA 0.0 Type Clg Hta Type Cooling Capacity Coil Airfl Ent Lvq 76.3 0.0 Clg Cfm/Sqft 0.00 RADR 0 660 Deg F Vent (Mbh) (cfm) Deg F 0.00 Plenum 0.0 70.0 150 Clg Cfm/Ton 75.3 Infii 0 -67.7 3,720 58.1 Main Htg 0.00 Return 0.0 70.0 0 3.720 Clg Sqft/Ton 0 0.0 0.0 Supply Aux Eta 0.0 0.0 58.1 0.00 Ret/OA 58.1 -1.0 Mincfm ٥ 0 Clg Btuh/Sqft -0.0 3.720 Preheat 0 Runarnd · 0.0 70.0 3,720 No. People 0.0 0 0.0 0.0 Return 0 17.7 Fn MtrTD 0.3 0.3 0 660 Htg & OA Exhaust 0.0 0.0 Humidif 0.0 0 0.3 Fn BldTD 0.3 1.67 Rm Exh 0 Htg Cfm/SqFt 0 0.0 0.0 Opt Vent 0.0 Htg Btuh/SqFt -30.34 Fn Frict 0.8 O

Auxil

System 5 Peak SZ - SINGLE ZONE

**************************************			Mo/Hr:				*	Mo/Er:	7/1	.5 *		Mo/Hr: 13/	/ 1	
Outside Air		OADI	3/WB/HR:	94/ 78/124.0			*	OADB:	94			OADB:	3	
					M-1	Percnt	*	Space		Percnt *	Space Pea	k Coil Pe	eak	Percnt
		Space		Ret. Air		Of Tot		Sensible		f Tot *	Space Ser	s Tot Se	ens	Of Tot
	Sens	.+Lat.	Sensible			(%)		(Btuh)		(%) *	(Btul		uh)	(%)
Envelope Loa	ds	(Btuh)	(Btuh)		(Btuh)	0.00		(200		0.00 *	•	0	0	0.00
Skylite So		0	0		0	0.00		·		0.00 *		0	0	0.00
Skylite Co	nđ	0	0		. 0	6.23		9,72		9.56 *	-9,50	58 -9,	568	11.06
Roof Cond		9,725	0		9,725	4.9		7,68		7.56 *	•	0	0	0.00
Glass Sola	r	7,688	0		7,688	1.8		2,82		2.78 *	-10,8	55 -10,	855	12.55
Glass Cond		2,829	0		2,829		2 *	5,03		4.95 *	-16,4	41 -16,	441	19.01
Wall Cond		5,030	c	1	5,030	0.0			0	0.00 *		0	0	0.00
Partition		0							0	0.00 *	-7,5	86 -7,	586	8.77
Exposed Fl	OOI	0			0			5,97		5.87 *	-21,0	63 -21,	063	24.36
Infiltrati	on.	19,445			19,445	12.4		31,24		30.72 *	-65,5		514	75.76
Sub Total=	=>	44,717	()	44,717	28.5	2 *	31,24	-	*	,-	-,		
Internal Los	ds									50.24 *		0	0	0.00
Lights		51,099	()	51,099			51,09		12.29 *		0	0	0.00
People		22,500			22,500	_		12,50				0	0	0.00
Misc		12,950	(0	12,950			12,95		12.75		0	0	0.00
Sub Total	=>	86,549	•	0	86,549			76,54		, , , , ,		0	0	0.00
Ceiling Load	1	0		ס	0	0.0	0 *		0	0.00 *		-	-	31.27
Outside Air		0		0	24,963	15.9	8 *		0	0.00 *		0 -27,		-7.03
Sup. Fan Hea	at				6,080	3.8	9 *			0.00 *		٥,	080	
Ret. Fan Hea	ıt			ס	0	0.0	0 *			0.00 *			0	0.00
Duct Heat Pi	tup			0	0	0.0	0 *			0.00 *			0	0.00
OV/UNDR Siz	lng	-6,090			-6,090	-3.9	0 *	-6,09	10	-5.99 *		0	0	-0.00
Exhaust Read	:			0	0	0.0	0 *			0.00 *			0	0.00
Terminal By	ass			0 0	O	0.0	0 *			0.00 *			0	0.00
		125 175		0 0	156.219	100.0	* 0	101,70	14	100.00 *	-65,5	14 -86,	474	100.00
Grand Total		125,176		-										
				OLING COIL S							Gross Tot	AREAS		(%)
•	rotal Ca	•	Sens Cap.			ng DB/W		Leavin	_	Grains	Floor	5,712	(, (-,
(:	rons)	(Mbh)	(Mbh)	(cfm)	•	g F Gr		-	99 F 16.6	46.7	Part	10,490		
Main Clg	13.0	156.2	115.5	3,800		51.8	62.7		0.0	0.0	ExFlr	169		
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0		0.0	Roof	5,712		0
Opt Vent	0.0	0.0	0.0	o	0.0	0.0	0.0	0.0	0.0	0.0	Wall	2,408	2	48 1
Totals	13.0	156.2									Wall	2,400	_	-
	BEATING	COIL SEL	ECTION		A	RFLOWS	(cfm)		E1	GINEERING	CHECKS	Temper		
с	apacity	Coil A	irfl Ent	Lvg	Туре	Cooli	ıg	Heating	Clg	N OA	10.0	Туре	Clg	Htg
	(Mbh)	(cf:	m) Deg	F Deg F	Vent .	38	30	380	Clg	Cfm/Sqft	0.67	SADB	49.8	
Main Etg	-113.2		800 56.		Infil	29	96	296	Clg	Cfm/Ton	291.90	Plenum	75.0	
Aux Etg	0.0		o o.		Supply	3,80	00	3,800	Clg	Sqft/Ton	438.77	Return	75.0	
Preheat	-0.0	3.	800 63.		Mincfm		0	0	Clg	Btuh/Sqft	27.35	Ret/OA	76.9	
Reheat	0.0	- •	0 0.		Return	3,80	0	3,800	No.	People	50	Runarnd	75.0	
Humidif	0.0		0 0.		Exhaust	38	30	380	Htg	% OA	10.0	Fn MtrTD	0.5	
							_	_	***	Cfm/SqFt	0.67	Fn BldTD	0.4	. 0.
Opt Vent	0.0		0 0.	0.0	Rm Exh		0	0	ntg	CIM/SQFC	0.01			

MAIN SYSTEM COOLING - ALTERNATIVE 1
BLDG 1350 BASERUN - FT LEONARD WOOD

PEAK COOLING LOADS -----

(Main System)

							Space						Coil		
			Peak	Ož.	Rm	Supp.	Space	Space	Space	Peak	OA RE	Supp.	Coil	Coil	Coil
			Time	Cond.			Air	Sens.	Lat.	Time	Cond. Dry	Dry	Air	Sens.	Lat.
Room			Mo/Hr	DB/WE	-	_	Flow	Load	Load	Mo/Hr	DB/WB Blb	Bulb	Flow	Load	Load
Number	Descri	ption		(F)	(F)	(F)	(Cfm)	(Btuh)	(Btuh)		(F) (F)	(F)	(Cfm)	(Btuh)	(Btuh)
3	CLASSR	OOM G	7/15	94 78	75	57.5	3,080	57,278	14,795	7/15	94 78 75	57.5	3,080	73,493	35,415
Zone		Total/Ave.	-	94 78			3,080	57,278	14,795		94 78 75	57.5	3,080	73,493	35,415
Zone		Block	7/15	94 71			3,080	57,278	14,795	7/15	94 78 75	57.5	3,080	73,493	35,415
System		Total/Ave.	•	94 7			3,080	57,278	14,795		94 78 75	57.5	3,080	73,493	35,415
System		Block	7/15	94 7			3,080	57,278	14,795	7/15	94 78 75	5 57.5	3,080	73,493	35,415
5		STRATION	7/15	94 7		49.8	3,800	101,704	23,472	7/15	94 78 7	49.8	3,800	115,452	40,767
Zone		Total/Ave		94 7		49.8	3,800	101,704	23,472		94 78 79	49.8	3,800	115,452	40,767
Zone		Block	7/15	94 7		49.8	3,800	101,704	23,472	7/15	94 78 75	49.8	3,800	115,452	40,767
System		Total/Ave		94 7			3,800	101,704	23,472		94 78 7	49.8	3,800	115,452	40,767
System		Block	7/15	94 7	8 75	49.8	3,800	101,704	23,472	7/15	94 78 7	5 49.8	3,800	115,452	40,767

MAIN BYSTEM HEATING - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

PEAK HEATING LOADS-----

(Main System)

														Coil -		
							Space	Space	Space	Peak	0.	A.	Rm	Supp.	Coil	Coil
			Peak	O.A			Supp.	Air	Sens.	Time	Cond		Dry	Dry	Air	Sens.
		Floor	Time	Cond.		ry lb	Dry Bulb	Flow	Load	Mo/Hr	DB/W	B	Blb	Bulb	Flow	Load
Room		Area	Mo/Hr	DB/WE			(F)	(Cfm)	(Btuh)		(F)	(F)	(F)	(Cfm)	(Btuh)
Mumber	Description	(Sq Ft)		(F)	ι (F)	.(F)	(CIM)	(224)		•					
		648	13/ 1	3	1	70	73.1	4,686	-15,343	13/ 1	3	1	70	73.1	4,686	-226,883
1	KITCHEN	648	13/ 1	3		70	73.1	4,686	-15,343		3	1	70	73.1	4,686	-226,883
Zone	1 Total/Ave.		13/ 1	3		70	73.1	4,686	-15,343	13/ 1	3	1	70	73.1	4,686	-226,883
Zone	1 Block	648	13/ 1	3	-	70	73.1	4,686	-15,343		3	1	70	73.1	4,686	-226,883
System	1 Total/Ave.	648 648	13/ 1	3	_	70	73.1	4,686	-15,343	13/ 1	3	1	70	73.1	4,686	-226,883
System	1 Block	4,728	13/ 1	3		67	136.3	1,480	-108,963	13/ 1	3	1	67	136.3	1,480	-108,332
2	WARKEOUSE SUPPLY 2 Total/Ave.	4,728	13/ 1	3		67	136.3	1,480	-108,963		3	1	67	136.3	1,480	-108,332
Zone		4,728	13/ 1	3	_	67	136.3	1,480	-108,963	13/ 1	. 3	1	67	136.3	1,480	-108,332
Zone	2 Block	4,728	13, 1	3		67	136.3	1,480	-108,963		3	1	67	136.3	1,480	-108,332
System	2 Total/Ave.	•	13/ 1	3	1	67	136.3	1,480	-108,963	13/ 1	. 3	1	67	136.3	1,480	-108,332
System	2 Block	4,728			_	70	83.4	3,080	-43,757		. 3	1	70	83.4	3,080	-82,346
3	CLASSROOMS	4,357	13/ 1	3	1	70	83.4	3,080	-43,757		3	1	70	83.4	3,080	-82,346
Zone	3 Total/Ave.	4,357			_		83.4	3,080	-43,757	13/ 2	. 3	1	. 70	83.4	3,080	-82,346
Zone	3 Block	4,357	13/ 1		1	70		3,080	-43,757		3	1	. 70	83.4	3,080	-82,346
System	3 Total/Ave.	4,357		3	_	70	83.4		•	13/ 3	1 3	1	70	83.4	3,080	-82,346
System	3 Block	4,357	13/ 1		_	70	83.4	3,080	-24,711				70	76.3	3,720	-67,708
4	ASSEMBLY HALL	2,232	13/ 1		1	70	76.3	3,720	-24,711	-	. 3		70	76.3	3,720	-67,708
Zone	4 Total/Ave.	2,232		3	1	70	76.3	3,720	-24,711		-		70	76.3	3,720	-67,708
Zone	4 Block	2,232	13/ 1		1	70	76.3	3,720	-24,711		3		. 70	76.3	3,720	-67,708
System	4 Total/Ave.	2,232		3	1	70	76.3	3,720			_		L 70	76.3	3,720	-67,708
System	4 Block	2,232	13/ 1		1	70	76.3	3,720	-24,711 -65,514				1 70		3,800	-86,474
5	ADMINISTRATION	5,712	13/ 1		1	70	86.2	3,800	15		3		. 70 L 70		3,800	-86,474
Zone	5 Total/Ave.	5,712		3	1	70	86.2	3,800	-65,514				1 70		3,800	-86,474
Zone	5 Block	5,712	13/ 1		1	70	86.2	3,800	-65,514	-	3				3,800	-86,474
System	5 Total/Ave.	5,712		3	1	70	86.2	3,800	-65,514						3,800	-86,474
System	5 Block	5,712	13/ 1	1 3	1	70	86.2	3,800	-65,514	13/	1 3		1 70	80.2	3,000	,

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

INTERNAL COOLING LOADS-----(At time of Coil Peak)

Room Number	Description	Lights Room Sensible (Btuh)	Lights Ret. Air Lites Sensible CLF (Btuh)	People Sensible (Btuh)	People Peopl Latent CLF (Btuh)	Misc. Space Sensible (Btuh)	Misc. Space Latent (Btuh)	Misc. Ret. Air Misc. Sensible CLF (Etuh)	Total (Btuh)
3	CLASSROOMS	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
_	3 Total/Ave.	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
Zone		27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
Zone	3 Block	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
System	3 Total/Ave.	•	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
System	3 Block	27,086	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
5	ADMINISTRATION	51,099	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
Zone	5 Total/Ave.	51,099	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
Zone	5 Block	51,099	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
System System	5 Total/Ave. 5 Block	51,099 51,099	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
-, -,									

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

INTERNAL COOLING LOADS-----(At time of Space Peak)

Room Number	Description	Lights Room Sensible (Btuh)	Lights Ret. Air Lites Sensible CLF (Btuh)	People Sensible (Btuh)	People Peopl Latent CLF (Btuh)	Misc. Space Sensible (Btuh)	Misc. Space Latent (Btuh)	Misc. Ret. Air Misc. Sensible CLF (Btuh)	Total (Btuh)
3	CLASSROOMS	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
Zone	3 Total/Ave.	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
Zone	3 Block	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
System	3 Total/Ave.	27,086	0 1.000	11,760	7,440 1.000	192	0	0 0.500	46,477
-	3 Block	27,086	0 1.000	11,760	7.440 1.000	192	0	0 0.500	46,477
System 5		51,099	0 1.000	12,500	10.000 1.000	12,950	0	0 0.890	86,549
-		51,099	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
Zone	5 Total/Ave.	•	0 1.000	12,500	10,000 1.000	12,950	0	0 0.890	86,549
Zone	5 Block	51,099		•	10,000 1.000	12,950	0	0 0.890	86,549
System	5 Total/Ave.	51,099	0 1.000	12,500	•	•	0	0 0.890	86,549
System	5 Block	51,099	0 1.000	12,500	10,000 1.000	12,950	U	0 0.050	23,515

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS-----(Roof - Skylight)

(At time of Coil Peak)

					(**								
			Roof		Roof					skylight		Skylight	
			Return Air	Roof	Space	Roof	Skylight	Skylight	Skylt	Return Air	sky1t	Space	Skylt
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space
			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLTD
Room			Load	CDID				(54		(Btuh)	(F)	(Btuh)	(F)
Number		Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Bean)	(-,	, ,	
			0	0.0	7,418	68.1	0	0	0.000	0	0.0	0	0.0
3	CLASS	ROOMS	U		•			0	0.000	0	0.0	0	0.0
Zone	3	Total/Ave.	0	0.0	7,418	68.1	0	-	_	-		0	0.0
Zone	3	Block	0	0.0	7,418	68.1	0	0	0.000	0	0.0		
	_			0.0	7,418	68.1	0	0	0.000	0	0.0	0	0.0
System	3	Total/Ave.	0	0.0			-	•	0.000	0	0.0	0	0.0
System	3	Block	0	0.0	7,418	68.1	0	U				0	0.0
. 5	ADMI	ISTRATION	0	0.0	9,725	68.1	0	0	0.000	0	0.0		
-			^	0.0	9,725	68.1	0	0	0.000	0	0.0	0	0.0
Zone	5	Total/Ave.	0		*			•	0.000	0	0.0	0	0.0
Zone	5	Block	0	0.0	9,725	68.1	0	0					
Fueton	5	Total/Ave.	0	0.0	9,725	68.1	0	0	0.000	0	0.0	0	0.0
System	_				9,725	68.1	0	0	0.000	0	0.0	0	0.0
System	5	Block	О	0.0	9,723	90.1	•	•					

BUILDING ENVELOPE COOLING LOADS-----

(Wall - Window)

(At time of Coil Peak)

Room Number	Descri	ption	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Etuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	R.A. CLTD (F)
3	CLASSR	OOMS	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
Zone		Total/Ave.	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
Zone		Block	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
System		Total/Ave.	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
System		Block	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
5	_	STRATION	0	0.0	5,030	20.5	7,688	0	0.340	2,829	18.4	o	0.0
Zone	-	Total/Ave.	0	0.0	5,030	20.5	7,588	0	0.340	2,829	18.4	0	0.0
Zone	_	Block	0	0.0	5,030	20.5	7,688	0	0.340	2,829	18.4	0	0.0
System		Total/Ave.	0	0.0	5,030	20.5	7,688	0	0.340	2,829	18.4	0	0.0
System		Block	. 0	0.0	5,030	20.5	7,688	0	0.340	2,829	18.4	0	0.0

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)

		Exposed Floor	Expsd Floor	Partition		Infilt.	Infilt.	Infilt.	Plenm Dry B Temp.	Ceiling Sensible Load	Envelope Total
Room		Sensible	CLTD	Sensible	CLTD	Airflow	Sensible	Latent (Btuh)	(F)	(Btuh)	(Btuh)
Number	Description	(Btuh)	(F)	(Btuh)	(F)	(Cfm)	(Btuh)	(Btun)	(F)	(Zcun)	(22/
3	CLASSROOMS	0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596
-		0		0	0.0	214	4,318	7,355	75.0	0	25,596
Zone	3 Total/Ave.			0		214	4,318	7,355	75.0	0	25,596
Zone	3 Block	0	0.0	U			•	7 355	75.0	0	25,596
System	3 Total/Ave.	0	0.0	0	0.0	214	4,318	7,355	/3.0	U	23,030

PAGE 17

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS-----(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	-	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
	0 016	0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596
System	3 Block	0	0.0	0	0.0	296	5,973	13,472	75.0	0	44,717
5	ADMINISTRATION	_	0.0	0		296	5,973	13,472	75.0	0	44,717
Zone	5 Total/Ave.	0		0	0.0	296	5,973	13,472	75.0	0	44,717
Zone	5 Block	0	0.0			296	5,973	13,472	75.0	0	44,717
System System	5 Total/Ave. 5 Block	0	0.0	0		296	5,973	13,472		0	44,717
System	2 BIOCK	U									

By: Trane Customer Direct Service Network

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS------(Roof - Skylight)

(At time of Space Peak)

					· ·	C CIME	02 2 F=====	•		Skylight		Skylight	
			Roof Return Air	Roof	Roof Space	Roof	Skylight	skylight	Skylt	Return Air	skylt	Space Conduction	Skylt Space
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Load	CLTD
Room			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD		
Number	Desc	cription	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
3	CLASSROOM	45	0	0.0	7,418	68.1	0	0	0.000	0	0.0	0	0.0
-		tal/Ave.	0	0.0	7,418	68.1	0	o	0.000	0	0.0	0	0.0
Zone			0	0.0	7,418	68.1	0	0	0.000	0	0.0	О	
Zone	3 Blo		0	0.0	7,418	68.1	0	0	0.000	0	0.0	0	0.0
System		tal/Ave.		0.0	7,418	68.1	0	0	0.000	0	0.0	0	0.0
System	3 B10		0		9,725	68.1	0	0	0.000	0	0.0	0	0.0
5	ADMINIST		0	0.0			0	0		0	0.0	0	0.0
Zone	5 To	tal/Ave.	o	0.0	9,725	68.1		0		0	0.0	0	0.0
Zone	5 B1	ock	0	0.0	9,725	68.1	0	_		0		o	0.0
System	5 To	tal/Ave.	0	0.0	9,725	68.1	0	0				0	
System	5 Bl	ock	0	0.0	9,725	68.1	0	0	0.000	0	0.0	v	0.0

BUILDING ENVELOPE COOLING LOADS------

(Wall - Window)

(At time of Space Peak)

			Wall	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Plenum	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
3	CLASS	ROOMS	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
Zone		Total/Ave.	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
Zone		Block	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
	-	Total/Ave.	0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
System			0	0.0	2,346	12.3	3,360	0	0.700	799	18.4	0	0.0
System		Block	0	0.0	5,030	20.5	7,688	О	0.340	2,829	18.4	0	0.0
5		IISTRATION	0	0.0	5,030	20.5	7,688	0	0.340	2,829	18.4	0	0.0
Zone		Total/Ave.	-		•	20.5	7,688	0	0.340	2,829	18.4	0	0.0
Zone	5	Block	0	0.0	5,030			-	0.340	2,829	18.4	0	0.0
System	5	Total/Ave.	0	0.0	5,030	20.5	7,688	•		•		0	0.0
System	5	Block	0	0.0	5,030	20.5	7,688	0	0.340	2,829	18.4	U	0.0

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
3	CLASSROOMS	0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596
-		0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596
Zone	-	0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596
Zone System	<pre>3 Block 3 Total/Ave.</pre>	0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)
(At time of Space Peak)

Room Number	Description	Exposed Floor Sensible (Btuh)	-	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
	3 Block	0	0.0	0	0.0	214	4,318	7,355	75.0	0	25,596
System	3 Block	0	0.0	0		296	5,973	13,472	75.0	0	44,717
5	ADMINISTRATION	0	0.0	0		296	5,973	13,472	75.0	0	44,717
Zone	5 Total/Ave.	0	0.0	0		296	5,973	13,472	75.0	0	44,717
Zone	5 Block			0		296	5,973	13,472	75.0	0	44,717
System System	5 Total/Ave. 5 Block	0	0.0	0		296	5,973	13,472	75.0	0	44,717

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

(At time of Coil Peak)

					-	r rime	01 0011 104,			Skylight		Skylight	
			Roof		Roof			m>> 4>	@bss1+	Return Air	Skylt	Space	Skylt
			Return Air	Roof	Space	Roof	Skylight			Conduction	R.A.	Conduction	Space
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Load	CLTD	Load	CLTD
Room			Load	CLTD	Load	CLTD	Solar	Solar	CLF		(F)	(Btuh)	(F)
Number		Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(1)	(20011)	(- /
, campor		•				•				_		0	0.0
1	KITCH	RN	0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0
Zone	1		0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0
Zone	1	Block	0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0
System	1	Total/Ave.	o	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0
System	_	Block	0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0
2	-	OUSE SUPPLY	o	0.0	-38,430	-64.0	0	0	0.000	0	0.0	0	
Zone	2		0	0.0	-30,430	-64.0	0	0	0.000	0	0.0	-	
2one	2	Block	o	0.0	-38,430	-64.0	0	0	0.000	0	0.0	0	
System	2	Total/Ave.	0	0.0	-38,430	-64.0	0	0	0.000	0		0	
•	2		0	0.0	-38,430	-64.0	0	0	0.000	0	0.0	0	
System	CLASS		0	0.0	-7,298	-67.0	0	0	0.000	0	0.0	0	
3		Total/Ave.	0	0.0	-7.298	-67.0	0	0	0.000	0	0.0	0	
Zone			0	0.0	-7,298	-67.0	o	O	0.000	0	0.0	0	0.0
Zone	3	Block	_	0.0	-7,298			C	0.000	0	0.0	0	0.0
System	3	Total/Ave.	=	0.0	-7,298	-67.0		c	0.000	o	0.0	0	0.0
System	3		0	0.0	-3,739			c	0.000	C	0.0	0	0.0
4		BLY HALL	0		-3,739			(0.000	· c	0.0	0	0.0
Zone	4	Total/Ave.		0.0	-3,739			(0.000	c	0.0	0	0.0
Zone	4	Block	0		-3,739				0.000		0.0	o	0.0
System	4	Total/Ave.			=				0.000		0.0	o	0.0
System	4	Block	0		-3,739				0.000	, (0.0	c	0.0
5	ADMIE	ISTRATION	0		-9,568		_				0.0	c	0.0
Zone	5	Total/Ave.			-9,568				0.000			d	0.0
Zone	5	Block	0		-9,568				0.000		0.0	·	0.0
System	5	Total/Ave.	. 0		-9,568				0.000	·	0.0		0.0
System	5	Block	0	0.0	-9,568	-67.0	0	,	, 0.000	,			

(Wall - Window)

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Etuh)		Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Etuh)	Glass R.A. CLTD (F)
		0	0.0	-5.975	-67.0	0	0	0.000	-263	-67.0	0	0.0
1		_		-5,975		0	0	0.000	-263	-67.0	0	0.0
Zone	1 Total/Ave.	0	0.0	•		0	0	0.000	-263	-67.0	0	0.0
Zone	1 Block	0	0.0	-5,975				0.000	-263	-67.0	0	0.0
System	1 Total/Ave.	0	0.0	-5,975	-67.0	0	_			-67.0	o	0.0
System	1 Block	0	0.0	-5,975	-67.0	0	0	0.000				
2	WAREHOUSE SUPPLY	0	0.0	-28,149	-64.0	0	0	0.000	-1,507		0	
_		0	0.0	-28,149	-64.0	0	0	0.000	-1,507	-64.0	0	0.0
Zone	2 Total/Ave.			-		0	0	0.000	-1,507	-64.0	0	0.0
Zone	2 Block	0	0.0	-28,149				0.000	-1,507	-64.0	0	0.0
System	2 Total/Ave.	0	0.0	-28,149	-64.0	0	U	0.000	1,507	24.0		

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE HEATING LOADS-----(Wall - Window)

(At time of Coil Peak)

			Wall	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Plenum	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
_			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room		1-11	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Descr	iption	(BCuii)	(*)	(202)		, ,	·					
C	,	Block	0	0.0	-28,149	-64.0	0	0	0.000	~1,507	-64.0	0	0.0
System	CLASS		0	0.0	-12,781		0	0	0.000	-3,064	-67.0	0	0.0
		Total/Ave.	0	0.0	-12,781		0	0	0.000	-3,064	-67.0	0	0.0
Zone	_	Block	0	0.0	-12,781		0	0	0.000	-3,064	-67.0	0	0.0
Zone	3		0	0.0	-12,781		0	0	0.000	-3,064	-67.0	0	0.0
System	_	Block	0	0.0	-12,781		0	0	0.000	-3,064	-67.0	0	0.0
System		BLY HALL	0	0.0	-8,375		0	0	0.000	-263	-67.0	0	0.0
		Total/Ave.	0		-8,375		0	0	0.000	-263	-67.0	0	0.0
Zone	-	Block	0		-8,375		0	0	0.000	-263	-67.0	0	0.0
Zone		Total/Ave.	0		-8,375		0	0	0.000	-263	-67.0	0	0.0
System	4	Block	0		-8,375		0	0	0.000	-263	-67.0	0	0.0
System	•		0		-16,441		0	0	0.000	-10,855	-67.0	0	0.0
5		ISTRATION	0		-16,441		0	0	0.000	-10,855	-67.0	0	0.0
Zone	5		0		-16,441		0	0	0.000	-10,855	-67.0	0	0.0
Zone	5		0		-16,441		0		0.000	-10,855	-67.0	0	0.0
System	5		-		-16,441		0		0.000			0	0.0
System	5	Block	0	0.0	10,441	57.0	•	_		•			

BUILDING ENVELOPE HEATING LOADS------

(Exposed Floor - Partitions - Infiltration)

			Exposed	Expsd						Plenm	Ceiling	
			Floor	Floor	Partition	Part.	Infilt.	Infilt.	Infilt.	Dry B	Sensible	Envelope
Room			Sensible	CLTD	Sensible	CLTD	Airflow	Sensible	Latent	Temp.	Load	Total
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Cfm)	(Btuh)	(Btuh)	(F)	(Btuh)	(Btuh)
Mumber	Descr	1p010	(====,	ζ- /	, ,	• •						
1	KITCH	TN .	-1,616	-67.0	0	0.0	90	-6,404	0	70.0	0	-15,343
Zone	1		-1,616	-67.0	0	0.0	90	-6,404	0	70.0	0	-15,343
Zone	1	Block	-1,616		0	0.0	90	-6,404	0	70.0	0	-15,343
System	1		-1,616	-67.0	0	0.0	90	-6,404	0	70.0	0	-15,343
System		Block	-1,616	-67.0	o	0.0	90	-6,404	0	70.0	0	-15,343
2	_	OUSE SUPPLY	-11,106	-64.0	0	0.0	438	-29,772	0	67.0	0	-108,963
Zone		Total/Ave.	-11,106	-64.0	0	0.0	438	-29,772	0	67.0	0	-108,963
Zone	2	Block	-11,106		0	0.0	438	-29,772	0	67.0	0	-108,963
System	2		-11,106	-64.0	o`	0.0	438	-29,772	0	67.0	0	-108,963
System	2		-11,106	-64.0	0	0.0	438	-29,772	0	67.0	0	-108,963
3	CLASS		-5,387	-67.0	0	0.0	214	-15,228	0	70.0	0	-43,757
Zone	3		-5,387	-67.0	0	0.0	214	-15,228	0	70.0	0	-43,757
Zone	3	Block	-5,387	-67.0	0	0.0	214	-15,228	0	70.0	0	-43,757
System	3	Total/Ave.	-5,387	-67.0	0	0.0	214	-15,228	0	70.0	0	-43,757
System	3	Block	-5,387	-67.0	0	0.0	214	-15,228	0	70.0	0	-43,757
4	ASSEM	BLY HALL	-1,661		0	0.0	150	-10,674	0	70.0	0	-24,711
Zone	4	Total/Ave.	-1,661	-67.0	0	0.0	150	-10,674	0	70.0	0	-24,711
Zone	4	Block	-1,661		0	0.0	150	-10,674	0	70.0	0	-24,711
ZONE	•	BIOCK	1,001	0,.0	_							

Trane Air Conditioning Economics By: Trane Customer Direct Service Network

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE HEATING LOADS-----(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	-	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				0	0.0	150	-10,674	0	70.0	0	-24,711
System	4 Total/Ave.	-1,661				-	-10.674	0	70.0	0	-24,711
System	4 Block	-1,661	-67.0	0	0.0	150				0	-65.514
	ADMINISTRATION	-7,586	-67.0	0	0.0	296	-21,063	0	70.0		•
,		-7,586		0	0.0	296	-21,063	0	70.0	0	-65,514
Zone	5 Total/Ave.	·-				296	-21,063	0	70.0	0	-65,514
Zone	5 Block	-7,586	-67.0	0			•			0	-65,514
System	5 Total/Ave.	-7,586	-67.0	0	0.0	296	-21,063	0			•
System	5 Block	-7,586	-67.0	0	0.0	296	-21,063	0	70.0	0	-65,514

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS-----

(Roof - Skylight)

	(At time of Space Peak) Skylight Skylight													
			Roof		Roof									
			Return Air	Roof	Space	Roof	Skylight	Skylight	skylt	Return Air	Skylt	Space	8kylt -	
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space	
_			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLTD	
Room		Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)	
Number		Description	(Beam)	(-,	, ,									
	KITCH	PW .	0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0	
		Total/Ave.	0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0	
Zone	_	Block	0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0	
Zone	_		0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0	
System	1		0	0.0	-1,085	-67.0	0	0	0.000	0	0.0	0	0.0	
System	1	Block OUSE SUPPLY	0	0.0	-38,430	-64.0	0	0	0.000	0	0.0	0	0.0	
2			0	0.0	-38,430	-64.0	0	0	0.000	0	0.0	0	0.0	
Zone	2		0	0.0	-38,430	-64.0	0	0	0.000	0	0.0	0	0.0	
Zone	2	Block	0	0.0	-38,430		0	0	0.000	0	0.0	0	0.0	
System	2		0	0.0	-38,430		0	0	0.000	0	0.0	0	0.0	
System	2	Block	0	0.0	-7,298		0	0	0.000	0	0.0	0	0.0	
3		ROOMS	0	0.0	-7,298		0	0	0.000	0	0.0	0	0.0	
Zone	3		0	0.0	-7,298		0	0	0.000	0	0.0	0	0.0	
Zone	3	Block Total/Ave.	0	0.0	-7,298		0	0	0.000	C	0.0	o	0.0	
System	3		0	0.0	-7,298		0	0	0.000	C	0.0	O	0.0	
System	3	Block BLY HALL	0		-3,739		О	c	0.000	c	0.0	c	0.0	
4					-3,739		0	c	0.000	c	0.0	C	0.0	
Zone	4		0		-3,739		0	c	0.000	C	0.0	C	0.0	
Zone	4		-		-3,739			C	0.000		0.0	C	0.0	
System	4		0		-3,739			(0.000		0.0	(0.0	
System	4		0		-9,568			(0.000		0.0		0.0	
5		NISTRATION			-9,568			(0.000		0.0		0.0	
Zone	-	Total/Ave.	_		-9,568	_		(0.000	, (0.0		0.0	
Zone	5		0		-9,566				0.000		0.0) (0.0	
System	5				-9,566				0.000		0.0) (0.0	
System	5	Block	0	0.0	-9,500	, -0/.0	,							

BUILDING ENVELOPE HEATING LOADS-----(Wall - Window)

		Wall	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
		Plenum	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
_		Load	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room Number	Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
1	KITCHEN	o	0.0	-5,975	-67.0	О	0	0.000	-263	-67.0	0	0.0
_	1 Total/Ave.	0	0.0	-5,975	-67.0	0	0	0.000	-263	-67.0	0	0.0
Zone	1 Block	0	0.0	-5,975		0	0	0.000	-263	-67.0	0	0.0
Zone	1 Total/Ave.	0	0.0	-5,975		0	0	0.000	-263	-67.0	0	0.0
System	1 Block	0	0.0	-5,975		0	0	0.000	-263	-67.0	0	0.0
System 2	WAREHOUSE SUPPLY	0	0.0	-28,149		0	o	0.000	-1,507	-64.0	0	0.0
_	2 Total/Ave.	0	0.0	-28,149		0	0	0.000	-1,507	-64.0	0	0.0
Zone		0	0.0	-28,149		0	0	0.000	-1,507	-64.0	0	0.0
Zone System	2 Block 2 Total/Ave.	0	0.0	-28,149		0	0	0.000	-1,507	-64.0	0	0.0

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD ------BUILDING ENVELOPE HEATING LOADS------

(Wall - Window)

(At time of Space Peak)

			Wall	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
				Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
			Plenum	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
ROOM			Load				(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Descr	iption	(Btuh)	(F)	(Btuh)	·(F)	(2021.)	,,					
							0	0	0.000	-1,507	-64.0	0	0.0
System	2	Block	0	0.0	-28,149		0	_	0.000	-3,064	-67.0	0	0.0
3	CLASS	ROOMS	0	0.0	-12,781		=	0		-3,064		0	0.0
Zone	3	Total/Ave.	0	0.0	-12,781		0	_		-3,064		0	0.0
Zone	3	Block	0	0.0	-12,781	-67.0	0	0		-3,064	-	o	0.0
System	3	Total/Ave.	0	0.0	-12,781	-67.0	0	0	0.000	•		0	0.0
System	3	Block	0	0.0	-12,781	-67.0	0	0		-3,064		0	
4	-	BLY HALL	0	0.0	-8,375	-67.0	0	0	0.000	-263		0	
-		Total/Ave.	0	0.0	-8,375	-67.0	0	0	0.000	-263		_	
Zone			0	0.0	-8,375	-67.0	0	0	0.000	-263		0	
Zone	4		0		-8,375		0	0	0.000	-263	-67.0	0	0.0
System	4	Total/Ave.			~8,375		0	0	0.000	-263	-67.0	0	0.0
System	4	Block	0		•		0	_	0.000	-10,855	-67.0	0	0.0
5	ADMI	IISTRATION	0		-16,441			_		-10,855		0	0.0
Zone	5	Total/Ave.	0	0.0	-16,441		0	_				0	0.0
Zone	5	Block	0	0.0	-16,441	-67.0	0	_				0	0.0
System	5	Total/Ave.	0	0.0	-16,441	-67.0	0					0	
System	_		0	0.0	-16,441	-67.0	o		0.000	-10,855	-67.0	·	0.0

------BUILDING ENVELOPE HEATING LOADS------

(Exposed Floor - Partitions - Infiltration)

			Exposed Floor Sensible	Expsd Floor CLTD	Partition Sensible	Part.	Infilt.	Infilt. Sensible	Infilt. Latent	Plenm Dry B Temp.	Ceiling Sensible Load	Envelope Total
Room						(F)	(Cfm)	(Btuh)	(Btuh)	(F)	(Btuh)	(Btuh)
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(61.2)	(====,	•			
_			-1,616	-67.0	0	0.0	90	-6,404	0	70.0	0	-15,343
	KITCH		· ·		0	0.0	90	-6,404	0	70.0	0	-15,343
Zone	1		-1,616		0	0.0	90	-6,404	0	70.0	0	-15,343
Zone	1	Block	-1,616	-67.0	0	0.0	90	-6,404	0	70.0	0	-15,343
System	1		-1,616		=	0.0	90	-6,404	0	70.0	0	-15,343
System	1	Block	-1,616		0		438	-29,772	0	67.0	0	-108,963
2	WARES	OUSE SUPPLY	-11,106		0	0.0	438	-29,772	0	67.0	0	-108,963
Zone	2	Total/Ave.	-11,106		0			-29,772	0	67.0	0	-108,963
Zone	2	Block	-11,106	-64.0	0.		438		0	67.0	0	-108,963
System	2	Total/Ave.	-11,106	-64.0	0		438	-29,772	0		0	-108,963
System	2	Block	-11,106	-64.0	0	0.0	438	-29,772	_		0	-43,757
3	CLASS	ROOMS	-5,387	-67.0	0	0.0	214	-15,228	0		0	-43,757
Zone	3	Total/Ave.	-5,387	-67.0	0	0.0	214	-15,228	0		-	-43,757
Zone	3	Block	-5,387	-67.0	0	0.0	214	-15,228	0		0	
System	3		-5,387	-67.0	0	0.0	214	-15,228	0	70.0	0	-43,757
System	_	Block	-5,387	-67.0	0	0.0	214	-15,228	C	70.0	О	-43,757
-	-		-1,661		0	0.0	150	-10,674	C	70.0	0	-24,711
4		TELY HALL	-1,661		0	0.0	150	-10,674	c	70.0	0	-24,711
Zone	4		•		C		150	-10,674	c	70.0	0	-24,711
Zone	4	Block	-1,661	-67.0		. 0.0	-50					

PAGE 25

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

Room Number	Desci	iption	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
					_		150	-10,674	0	70.0	0	-24,711
System	4	Total/Ave.	-1,661	-67.0	0			- •	0	70.0	0	-24,711
System	4	Block	-1,661	-67.0	0	0.0	150	-10,674			0	-65,514
-	_		-7,586	-67.0	0	0.0	296	-21,063	0	70.0		•
5		ISTRATION	-		0	0.0	296	-21,063	O	70.0	0	-65,514
Zone	5	Total/Ave.	-7,586				296	-21,063	0	70.0	0	-65,514
Zone	5	Block	-7,586	-67.0	0			- •	0	70.0	0	-65,514
System	5	Total/Ave.	-7,586	-67.0	0	0.0	296	-21,063			0	-65,514
System	5	Block	-7,586	-67.0	0	0.0	296	-21,063	0	70.0	U	-03,314

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

		-					onal Ventila		Airflow	- Bypass	Latent	Ov/Undr Sizing
Room			Airflow	Sensible		Airflow		(Btuh)	(Cfm)	(Btuh)	(Btuh)	(Btuh)
Number		Description	(Cfm)	(Btuh)	(Btuh)	(Cfm)	(Btuh)	(Dean)	()	•		
				40.400	20,620	0	0	0	0	0	0	o
3	CLASS	ROOMS	600	12,108	•		0	0	0	0	0	0
Zone	3	Total/Ave.	600	12,108	20,620		_	_		0	0	0
Zone	3	Block	600	12,108	20,620	0	0	0		-	0	0
_	3		600	12,108	20,620	0	0	0	0	0	-	-
System	3		600	12,109	20,620	. 0	0	0	0	0	0	0
System	3	Block			-		0	0	. 0	0	0	-6,090
5	ADMIR	ISTRATION	380	7,668	17,295			C	0	0	0	-6,090
Zone	5	Total/Ave.	380	7,668	17,295	0	0			0	0	-6,090
	5	Block	380	7,668	17,295	. 0	0	C	. 0	-	_	
Zone	_			7,668	17,295	. 0	٥	C	0	0	0	-6,090
System	5	Total/Ave.			•		0		. 0	0	0	-6,090
System	5	Block	380	7,668	17,295	, 0	Ü	-				

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

AIRFLOW HEATING LOADS -----(At time of Coil Peak)

			Venti	lation	Op.	Vent	Rel	eat	Hum:	idif	
Room			Airflow	Sensible		Sensible	Airflow	Sensible	Airflow	Latent	Total
Number		Description	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Btuh)
	KITCH		3,036	-216,038	0	0	0	0	0	0	-216,038
_ 1			3,036	-216,038	0	0	0	0	0	0	-216,038
Zone	1		3,036	-216,038	0	0	0	0	0	0	-216,038
Zone	1		•	-216,038	=	0	0	0	0	0	-216,038
System	1	-	3,036	-216,038		0		0	0	0	-216,038
System	1		3,036	•		0	-	0	0	0	0
2		OUSE SUPPLY	0	0		0		0	. 0	0	0
Zone	2	Total/Ave.	o	0		0				0	0
Zone	2	Block	0	0			_			0	0
System	2	Total/Ave.	0	0		_	_		-	0	0
System	2	Block	0	0				,	-	0	-42,695
3	CLASS	BROOMS	600	-42,695		(0	-42,695
Zone	3	Total/Ave.	600	-42,695		C	-	(-	0	-42,695
Zone	3	Block	600	-42,695			0		0	0	-42,695
System	3	Total/Ave.	600	-42,695	. 0	(0		0	_	-42,695
System	3	Block	600	-42,695			0		0	0	
4	ASSE	MBLY HALL	660	-46,965	5 0	(0		0 0	0	-46,965
Zone	4	Total/Ave.	660	-46,965	5 0	•	0		0 0	0	-46,965
Zone	4	Block	660	-46,96	5 0		0		0 0	0	-46,965
System	4	Total/Ave.	660	-46,96	5 0	1	0 0		0 0	0	-46,965
System	4	Block	660	-46,96	5 0		0 0		0 0	0	-46,965
5	ADMI	NISTRATION	380	-27,040	0 0		0 0		0 0	0	-27,040
Zone	5	Total/Ave.	380	-27,040	0 0		0 0		0 0	. 0	-27,040
Zone	5	Block	380	-27,04	0 0		0 0		0 0	0	-27,040
System			380	-27,04			0 0		0 0	0	-27,040
System			380	-27,04			0 0		0 0	0	-27,040
placem		21001	200	,	_						

COOLING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

Room Number		Description	Duct Heat Pickup (Btuh)	Supply Fan Heat (Btuh)	Return Fan Heat (Btuh)	System Exhaust Heat Loss (Btuh)		Airflow	Room Exhaust	Ducted Airflow (Cfm)			Corridr Airflow (Cfm)	System Return Airflow (Cfm)
			0	4,107	0	0	4,107	600	0	3,080	0	0	0	•
3	CLASS	ROOMS	-			0	4,107	600	0	3,080	0	0	0	3,080
Zone	3	Total/Ave.	0	4,107	0	-	•			3,080	0	0		3,080
Zone	3	Block	0	4,107	0	0	4,107		-	•				3,080
System	3	Total/Ave.	0	4,107	0	0	4,107	600	0	•	_	_	_	•
-	_	Block	0	4,107	0	0	4,107	500	0	3,080	0			•
System	_		0	6,080	o	0	6,080	380	. 0	3,800) (3,800
5		IISTRATION			0		6,080	380		3,800		, (, (3,800
Zone	5	Total/Ave.	0	6,080		_	6,080			3,800		, () (3,800
Zone	5	Block	0	6,080	C		•	_		-		, (. (3,800
System	5	Total/Ave.	0	6,080	C	. 0	6,080	380		•		•	=	3,800
System		Block	0	6,080	c	0	6,080	380	, (3,800) (, () (, 3,600

HEATING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

------AIRFLOW HEAT GAIN AND LOSS------(At time of Coil Peak)

							Heating						,
					System		System	Room			Run		System
			Supply	Return Fan	Exhaust		Exhaust	Exhaust	Ducted	Plenum	Around	Corridr	Return
			Fan	ran Heat	Heat Loss	Total	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow
Room			Heat	(Btuh)	(Btuh)	(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
Number	D	escription	(Btuh)	(Bean)	(200)								
	KITCH	DM .	4,499	0	0	4,499	3,036	0	0	0		0	•
_	1		4,499	0	0	4,499	3,036	0	0			0	
Zone Zone	1	Block	4,499	0	0	4,499	3,036	. 0	0				
System	1	Total/Ave.	4,499	0	0	4,499	3,036		0				
System	1	Block	4,499	0	0	4,499	3,036	, ,	. 0				•
аув. с ем 2	_	OUSE SUPPLY	631	0	0	631	C	, ,	0				-•
Zone	2	Total/Ave.	631	0	0	631	(, (•
Zone	2	Block	631	0	0	631	(, () C				•
System	2	Total/Ave.	631	0	0	631	() (
System	2		631	0	0	631	•	, () (
3	_	SROOMS	4,107	0	0	4,107	60	0 (3,080) (•
Zone	3		4,107	0	0	4,107	60	0	3,080		-	•	3,080
Zone	3	Block	4,107	C	0	4,107	60	0	3,080		•		3,080
System	3		4,107	c	0	4,107	60	0	0 3,08		-	•	•
System	3		4,107	c	0	4,107	60	0	0 3,08	•	-	•	0 3,080 0 3,720
4	ASSE	MBLY HALL	3,968	C	0	3,968	66	-	-	•	•	-	- ,
Zone	4	Total/Ave.	3,968	(0	3,968	66	0	•	•	•	-	0 3,720
Zone	4	Block	3,968	(0	3,968	66	0	•	•	-	•	0 3,720
System	4	Total/Ave.	3,968	(0	3,968	66	0	•	•	•	-	0 3,720
System	4	Block	3,968	(0	3,968	66	0	0	_	•	•	0 3,720
5	ADMI	NISTRATION	6,080		0	6,080	38	80	0 3,80	•	•	-	0 3,800
Zone		Total/Ave.	6,080		0 0	6,080	38	30	0 3,80	•	-	•	0 3,800
Zone	5	Block	6,080	1	0 0	6,080	38	30	0 3,80		0	•	0 3,800
System	_	Total/Ave.	6,080		0 0	6,080	36	30	0 3,80		0	•	0 3,800
System	_	Block	6,080		0 0	6,080	3 (30	0 3,80	0	0	0	0 3,800
ole cem			•										

ZONE PSYCHROMETRICS - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

Zone

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	63.3	53.2	72.5	29.3	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	75.0	63.3	53.2	72.6	29.3	
Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	78.7	56.4	53.4	82.6	31.8	
Blow through Fan						0.0
Entering Coil	78.7	66.4	53.4	82.6	31.8	
Leaving Coil	56.2	55.0	92.6	65.7	23.7	
Draw Through Fan						0.3
Duct Frictional Heat						0.9
						0.0
Supply Duct Heat Gain					24.0	
Cold Deck Supply Air	57.5	55.4	88.5	65.7		
Supply Air	57.5	55.4	88.5	65.7	24.0	

Percent Outside Air 19.48 (%)
Sensible Heat Ratio (SHR) 0.788
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 3,080 (Cfm)

ZONE PSYCHROMETRICS - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

------ PSYCHROMETRIC STATE POINTS-----

5 Zone

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	59.7	41.1	55.9	26.7	
Main System						0.0
Return Air Heat Pickup						
Return Fan						0.0
Return Air	75.0	59.7	41.1	55.9	26.7	
Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	76.9	61.8	43.2	62.7	28.3	
Blow through Fan						0.0
Entering Coil	76.9	61.8	43.2	62.7	28.3	
Leaving Coil	48.3	47.1	92.4	48.7	19.1	
Draw Through Fan						0.4
Duct Frictional Heat						1.1
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	49.8	47.8	87.3	48.7	19.5	
Supply Air	49.8	47.8	87.3	48.7	19.5	

10.00 (%) Percent Outside Air Sensible Heat Ratio (SHR) 0.829 0.00 (%) Percent Supply Air Bypassing Coil 3,800 (Cfm) Coil Airflow

PAGE 31

BUILDING U-VALUES - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING U-VALUES-----

	Room U-Values												Room
						(Btu	/hr/sqf	t/F)				Mass	Capac.
3					Summir	Wintr		Summr	Wintr			(15/	(Btu/
Room Number	Desc	ription	Part.	ExFlr	Skylt	Skylt	Roof	Windo	Windo	Wall	Ceil.	sqft)	sqft/F)
1	KITCE	rn	0.000	0.670	0.000	0.000	0.025	0.620	0.654	0.117	0.000	70.3	14.71
Zone	1		0.000	0.670	0.000	0.000	0.025	0.620	0.654	0.117	0.000	70.3	14.71
System	1		0.000	0.670	0.000	0.000	0.025	0.620	0.654	0.117	0.000	70.3	14.71
2		OUSE SUPPLY	0.388	0.670	0.000	0.000	0.127	0.620	0.654	0.118	0.000	69.3	14.52
Zone	2		0.388	0.670	0.000	0.000	0.127	0.620	0.654	0.118	0.000	69.3	14.52
System	2		0.388	0.670	0.000	0.000	0.127	0.620	0.654	0.118	0.000	69.3	14.52
3		ROOMS	0.388	0.670	0.000	0.000	0.025	0.620	0.654	0.115	0.000	58.9	12.43
Zone	3		0.388	0.670	0.000	0.000	0.025	0.620	0.654	0.115	0.000	58.9	12.43
System	3	Total/Ave.	0.388	0.670	0.000	0.000	0.025	0.620	0.654	0.115	0.000	58.9	12.43
4	_	CBLY HALL	0.388	0.670	0.000	0.000	0.025	0.620	0.654	0.121	0.000	49.9	10.63
Zone	4			0.670	0.000	0.000	0.025	0.620	0.654	0.121	0.000	49.9	10.63
System	4		0.388	0.670	0.000	0.000	0.025	0.620	0.654	0.121	0.000	49.9	10.63
5	_	ISTRATION	0.388	0.670	0.000	0.000	0.025	0.620	0.654	0.114	0.000	60.2	12.70
Zone	5			0.670	0.000	0.000	0.025	0.620	0.654	0.114	0.000	60.2	12.70
System	5		**			0.000	0.025	0.620	0.654	0.114	0.000	60.2	12.70
Buildir	_	10tal/Rva.	0.388		0.000		0.052	0.620	0.654	0.117	0.000	61.4	12.93

BUILDING AREAS - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING AREAS-----

Room Number	Description	Number Dupl:		Floor Area/Dupl Room (sqft)	Total Floor Area (sqft)	Partition Area (sqft)	Exposed Floor Area (sqft)	Skylight Area (sqft)	8kl /Rf (%)	Net Roof Area (sqft)	Window Area (aqft)	Win /Wl (%)	Net Wall Area (sqft)
1	KITCHEN	1	1	648	648	0	36	0	0	648	6	1	759
Zone	1 Total/Ave.		-		648	0	36	0	0	648	6	1	759
System	1 Total/Ave.				648	0	36	0	0	648	6	1	759
2 ayacem	WAREHOUSE SUPPLY		1	4,728	4,728	5,700	259	0	0	4,728	36	1	3,716
Zone	2 Total/Ave.			·	4,728	5,700	259	0	0	4,728	36	1	3,716
System	2 Total/Ave.				4,728	5,700	259	0	0	4,728	36	1	3,716
3	CLASSROOMS	1	1	4,357	4,357	7,520	120	0	0	4,357	70	4	1,652
Zone	3 Total/Ave.			•	4,357	7,520	120	0	0	4,357	70	4	1,652
System	3 Total/Ave.				4,357	7,520	120	0	0	4,357	70	4	1,652
L T T T T T	ASSEMBLY HALL	1	1	2,232	2,232	1,610	37	0	0	2,232	6	1	1,037
Zone	4 Total/Ave.				2,232	1,610	37	0	0	2,232	6	1	1,037
System	4 Total/Ave.				2,232	1,610	37	0	0	2,232	6	1	1,037
5	ADMINISTRATION	1	1	5,712	5,712	10,490	169	0	0	5,712	248	10	2,160
Zone	5 Total/Ave.	_	_	-,	5,712	10,490	169	0	0	5,712	248	10	2,160
System	5 Total/Ave.				5,712	10,490	169	0	0	5,712	248	10	2,160
Buildi		-			17,677	25,320	621	0	0	17,677	366	4	9,324

ASHRAE 90 ANALYSIS - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

----- A S H R A E 9 0 A N A L Y S I S -----

Overall Roof U-Value = 0.052 (Btu/Hr/Sq Ft/F)
Overall Wall U-Value = 0.136 (Btu/Hr/Sq Ft/F)

Overall Building U-Value = 0.082 (Btu/Hr/Sq Ft/F)

Roof Overall Thermal Transfer Value (OTTVr) = 3.52 (Btu/Hr/Sq Ft)
Wall Overall Thermal Transfer Value (OTTVw) = 7.09 (Btu/Hr/Sq Ft)

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

Main System 1 UV UNIT VENTILATOR

Perce		Cool	ing Loa	d	Beatir	ıg Load		Cooling	Airflow		Heating		
Desi		Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
	-	•	(%)	110020	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
_	ad	(Ton)		0	-13,945	1	61	234.3	0	0	0.0	0	0
0 -	5	0.0	0		-27,890	6	273	468.5	0	0	0.0	0	0
5 -	10	0.0	0	0	•	6	. 303	702.9	o	0	0.0	0	0
10 -	15	0.0	0	0	-41,835	-	519	937.2	0	0	0.0	0	0
15 -	20	0.0	0	0	-55,780	11		1,171.5	0	0	0.0	0	0
20 -	25	0.0	0	0	-69,725	12	578	-	0	0	0.0	0	0
25 -	30	0.0	0	0	-83,670	14	666	1,405.8		0	0.0	0	0
30 -	35	0.0	0	0	-97,615	12	577	1,640.1	0	-	0.0	0	0
35 -	40	0.0	O	0	-111,560	10	450	1,874.4	0	0		0	0
40 -	45	0.0	0	0	-125,505	10	461	2,108.7	0	0	0.0	0	0
45 -	50	0.0	0	0	-139,450	8	360	2,343.0	0	0	0.0		=
50 -	55	0.0	0	0	-153,395	8	394	2,577.3	0	0	0.0	0	0
55 -	60	0.0	0	0	-167,340	0	0	2,811.6	0	0	0.0	0	0
	65	0.0	0	0	-181,285	0	0	3,045.9	0	0	0.0	0	0
60 -			_	0	-195,230	0	0	3,280.2	0	0	0.0	0	0
65 -	70	0.0	0	_	•	0	0	3,514.5	0	0	0.0	0	0
70 -	75	0.0	0	0	-209,175		_	3,748.8	0	0	0.0	0	0
75 -	80	0.0	0	0	-223,120	0		•	-	0	0.0	0	0
80 -	85	0.0	0	0	-237,065	0		3,983.1	0		0.0	0	
85 -	90	0.0	0	0	-251,010	0	0	4,217.4	0	0		0	
90 -	95	0.0	0	0	-264,955	0	0	4,451.7	0	0	0.0	_	
95 -	100	0.0	0	0	-278,900	0	0	4,685.0	100	5,088	0.0	0	
Hour	s Off	0.0	0	8,760	0	0	4,098	0.0	0	3,672	0.0	0	8,760

UNIT HEATERS Main System 2 UE

Percent	Cool	ing Los	d	Reati	ng Load		Cooling	Airflow		Heating	Airflow	
Design		-	Hours	Capacity	Hours	Hours	Cap.	Bours	Hours	Cap.	Eours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(*)	
0 - 5	0.0	. ,	0	-5,417	16	201	74.0	0	0	0.0	0	0

5 - 10

10 - 15 15 - 20

20 - 25

25 - 30

30 - 35

35 - 40 40 - 45

45 - 50

50 - 55

55 - 60

60 - 65

65 - 70

70 - 75

75 - 80

80 - 85 85 - 90

90 - 95

95 - 100

Trane Air Conditioning Economics

By: Trane Customer Direct Service Network

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG 1350 BASERUM FT LEONARD WOOD

	Cool	ing Los	d	Heatir	o Load		Cooling	Airflow		Heating	Airflow	
Percent			Hours	Capacity		Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.		HOULD	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(%)		• •	12	159	148.0	0	0	0.0	0	. 0
0 - 5	0.0	0	0	-10,833			222.0	0	0	0.0	0	0
5 - 10	0.0	0	0	-16,250	7	95			0	0.0	0	0
10 - 15	0.0	0	0	-21,666	15	195	296.0	0			0	0
15 - 20	0.0	0	0	-27,083	20	265	370.0	0	0	0.0		0
20 - 25	0.0	0	0	-32,499	15	198	444.0	0	0	0.0	0	_
	0.0	0	0	-37,916	14	182	518.0	0	0	0.0	0	0
25 - 30		0	0	-43,333	0	0	592.0	0	0	0.0	0	0
30 - 35	0.0			-48,749	0	0	666.0	0	0	0.0	0	0
35 - 40	0.0	0	0	-	0	0	740.0	0	0	0.0	0	0
40 - 45	0.0	0	0	-54,166		0	814.0	0	0	0.0	0	0
45 - 50	0.0	0	0	-59,582	0		888.0	0	0	0.0	0	0
50 - 55	0.0	0	0	-64,999	0	0		_	0	0.0	0	0
55 - 60	0.0	0	0	-70,416	0	0	962.0	0	-		0	0
60 - 65	0.0	0	0	-75,832	0	0	1,036.0	0	0	0.0		_
65 - 70	0.0	0	0	-81,249	0	0	1,110.0	0	0	0.0	0	0
70 - 75	0.0	o	0	-86,665	0	0	1,184.0	0	0	0.0	0	0
		0	0	-92,082	0	0	1,258.0	0	0	0.0	0	0
75 - 80	0.0			-97,498	0	0	1,332.0	0	0	0.0	0	0
80 - 85	0.0	0		•			1,406.0	0	0	0.0	0	0
85 - 90	0.0	0	O	-102,915	0	0		100		0.0	0	0
90 - 95	0.0	0	0	-108,332	0		1,480.0	_	-	0.0	0	8,760
95 - 100	0.0	0	8,760	0	0	7,465	0.0	0	0	0.0	·	2,700

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

Main System 3 SZ SINGLE ZONE

	Cool	ing Los	d	Heatin	ng Load		Cooling	Airflow		Heating	Airflow	
Percent	Cap.	Hours		Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	-	(1)	Hours	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(*)	
Load	(Ton)	11	266	-4,357	11	164	154.0	0	0	0.0	0	0
0 - 5	0.5		_	-8,715	12	180	308.0	0	0	0.0	0	0
5 - 10	1.0	7	176	-13,073	12	181	462.0	0	0	0.0	C	0
10 - 15	1.5	10	246		7	105	616.0	0	0	0.0	0	0
15 - 20	2.0	7	163	-17,430		213	770.0	0	0	0.0	0	0
20 - 25	2.5	9	208	-21,787	15		924.0	0	0	0.0	0	0
25 - 30	3.0	7	181	-26,145	30	437		0	0	0.0	0	0
30 - 35	3.5	8	206	-30,503	13	186	1,078.0	0	0	0.0	0	0
35 - 40	4.0	10	249	-34,860	0	0	1,232.0		0	0.0	0	0
40 - 45	4.5	8	203	-39,218	0	0	1,386.0	0		0.0	0	0
45 - 50	5.0	6	147	-43,575	0	0	1,540.0	0	0		0	0
50 - 55	5.5	4	107	-47,933	0	0	1,694.0	0	0	0.0	0	0
55 - 60	6.0	4	85	-52,290	0	0	1,848.0	0	0	0.0	_	-
60 - 65	6.5	2	40	-56,648	0	0	2,002.0	0	0	0.0	0	0
65 - 70	7.0	2	45	-61,005	0	0	2,156.0	0	0	0.0	0	0
70 - 75	7.5	2	43	-65,363	0	0	2,310.0	0	0	0.0	0	0
75 - 80	8.0	2	42	-69,720	0	0	2,464.0	0	0	0.0	0	0
80 - 85	8.5	1		-74,078	0	0	2,618.0	0	0	0.0	0	0
	9.1	0		-78,435	0	0	2,772.0	0	0	0.0	0	0
85 - 90	9.6	0	_	-82,793	0	0	2,926.0	0	0	0.0	0	0
90 - 95				-87,150	0	_	3,080.0	100	8,760	0.0	0	0
95 - 100	10.1	0		-87,130	0		0.0	0	. 0	0.0	0	8,760
Hours Off	0.0	0	6,333	U	U	1,639	0.0	_				

Main System 4 SZ SINGLE ZONE

Percent	Cool	ing Los	d	Heatir	g Load		Cooling	Airflow		Heating	Airflow	
		-	Hours	Capacity	-	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	=		HOULE	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(%)	_	, ,	11	266	186.0	. 0	o	0.0	0	0
0 - 5	0.0	0	0	-3,385	11	200	10010	•	_			
5 - 10												

10 - 15

15 - 20

40 - 45

45 - 50

50 - 55

55 - 60 60 - 65

65 - 70

70 - 75

75 - 80 80 - 85

85 - 90

90 - 95

95 - 100

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

	Cool	ing Top	d	Heatir	ng Load -		Cooling	Airflow		Heating	Airflow	
Percent		Hours		Capacity		Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.		HOULB	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(*)		, ,	7	182	372.0	0	0	0.0	0	0
0 - 5	0.0	0	0	-6,771			558.0	0	0	0.0	0	0
5 - 10	0.0	0	0	-10,156	10	245		0	0	0.0	0	0
10 - 15	0.0	0	0	-13,542	9	210	744.0			0.0	0	0
15 - 20	0.0	0	0	-16,927	9	210	930.0	0	0	0.0	0	0
20 - 25	0.0	0	0	-20,312	14	331	1,116.0	0	0			0
25 - 30	0.0	0	0	-23,698	5	121	1,302.0	0	0	0.0	0	=
	0.0	0	0	-27,083	11	270	1,488.0	0	0	0.0	0	0
-		0	0	-30,469	10	242	1,674.0	0	0	0.0	0	0
35 - 40	0.0		0	-33,854	15	363	1,860.0	0	0	0.0	0	0
40 - 45	0.0	0		-37,239	0	0	2,046.0	0	0	0.0	0	0
45 - 50	0.0	0	0		0	0	2,232.0	0	0	0.0	0	0
50 - 55	0.0	0	0	-40,625			2,418.0	0	0	0.0	0	0
55 - 60	0.0	0	0	-44,010	0	0		0	0	0.0	0	0
60 - 65	0.0	0	0	-47,396	0	0	2,604.0	_		0.0	0	0
65 - 70	0.0	0	0	-50,781	0	0	2,790.0	0	0	0.0	0	
70 - 75	0.0	0	0	-54,166	0	0	2,976.0	0	0			_
75 - 80	0.0	0	0	-57,552	0	0	3,162.0	0	0	0.0		-
80 - 85	0.0	0		-60,937	0	0	3,348.0	0	0	0.0		
	0.0	0		-64,323	0	0	3,534.0	0	0	0.0	O	0
85 - 90		c		-67,708		0	3,720.0	100	5,088	0.0	0	0
90 - 95	0.0			0,,,00			0.0	0	3,672	0.0		8,760
95 ~ 100	0.0	C	8,760	U	Ū	5,520						

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

Main System 5 SZ SINGLE ZONE

Banant	Cool	ing Loa	d	Heatir	ng Load		Cooling	Airflow		Heating		
Percent	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	-	(%)	Bould	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(\$)	
Load	(Ton)		147	-5,658	30	82	190.0	0	0	0.0	0	0
0 - 5	0.7	5		-11,315	7	19	380.0	0	0	0.0	0	0
5 - 10	1.3	15	466	-16,972	63	172	570.0	0	0	0.0	0	0
10 - 15	2.0	10	288	•	03	. 0	760.0	0	0	0.0	0	0
15 - 20	2.6	6	189	-22,630		_	950.0	0	0	0.0	0	0
20 - 25	3.3	6	180	-28,288	0	0		0	C	0.0	0	0
25 - 30	3.9	4	112	-33,945	0	0	1,140.0	0	0	0.0	0	0
30 - 35	4.6	6	195	-39,603	0	0	1,330.0	_		0.0	0	0
35 - 40	5.2	6	176	-45,260	0	0	1,520.0	0	0	0.0	0	0
40 - 45	5.9	4	131	-50,918	0	0	1,710.0	0	0		0	0
45 - 50	6.5	6	169	-56,575	0	0	1,900.0	0	0	0.0		
50 - 55	7.2	1	42	-62,233	0	0	2,090.0	0	0	0.0	0	0
	7.8	6	176	-67,890	0	0	2,280.0	0	0	0.0	0	0
	8.5	3	102	-73,548	0	0	2,470.0	0	0	0.0	0	0
60 - 65		5	150	-79,205	0	0	2,660.0	0	0	0.0	0	0
65 - 70	9.1			-84,863	0		2,850.0	0	0	0.0	0	0
70 - 75	9.8	4			0		3,040.0	0	0	0.0	0	0
75 - 80	10.4	4		-90,520	_		3,230.0	0	0	0.0	0	0
80 - 85	11.1	4	127	-96,178	0		•	_	0	0.0	0	0
85 - 90	11.7	2	63	-101,835	C	0	3,420.0	0		0.0	0	0
90 - 95	12.4	1	22	-107,493	o	0	3,610.0	0	0		_	0
95 - 100	13.0	1	20	-113,150	C	0	3,800.0	100	8,760	0.0	0	-
Hours Off	0.0	0	5,745	0	C	8,487	0.0	0	0	0.0	0	8,760

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
BLDG 1350 BASERUN FT LEONARD WOOD

SYSTEM LOAD PROFILE-----

System Totals

										_		
Percent	Cool	ing Loa	d	Heatin	g Load		Cooling			_	Airflow Hours	Hours
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	(%)	дошть
Load	(Ton)	(%)		(Btuh)	(♦)		(Cfm)	(%)		(Cfm)	(*)	
	•					•				0.0	0	0
0 - 5	1.2	13	389	-32,762	10	456	838.3	0	0		0	0
5 - 10	2.3	12	365	-65,524	20	945	1,676.6	0	0	0.0	0	0
10 - 15	3.5	10	306	-98,286	26	1,201	2,514.9	0	0	0.0		0
15 - 20	4.6	5	158	-131,048	14	631	3,353.2	0	0	0.0	0	
20 - 25	5.8	5	158	-163,810	11	512	4,191.5	О	0	0.0	0	0
25 - 30	6.9	7	210	-196,572	7	331	5,029.8	0	0	0.0	0	0
30 - 35	8.1	7	198	-229,334	7	349	5,868.1	0	0	0.0	0	0
35 - 40	9.2	5	144	-262,096	5	237	6,706.4	0	0	0.0	0	0
40 - 45	10.4	6	169	-294,858	0	0	7,544.7	0	0	0.0	0	0
45 - 50	11.5	5	149	-327,620	0	0	8,383.0	42	3,672	0.0	0	0
50 - 55	12.7	5	_	-360,382	0	0	9,221.3	0	0	0.0	0	0
55 - 60	13.8	5		-393,144	0	0	10,059.6	0	0	0.0	0	0
60 - 65	15.0	5		-425,906	0	0	10,897.9	0	0	0.0	0	0
65 - 70	16.2	2		-458,668	0	0	11,736.2	0	0	0.0	0	0
70 - 75	17.3	4		-491,430	0	0	12,574.5	0	0	0.0	0	
75 - 80	18.5	1		-524,192	0	0	13,412.8	0	0	0.0	0	0
80 - 85	19.6	2		-556,954	0	0	14,251.1	0	0	0.0	0	0
	20.8	0		-589,716	0	0	15,089.4	0	0	0.0	0	0
85 - 90		1		-622,478	0	0	15,927.7	o	0	0.0	0	0
90 - 95	21.9			-655,240	0		16,766.0	58	5,088	0.0	0	0
95 - 100	23.1	0		-655,240	c		0.0		0	0.0	0	8,760
Hours Off	0.0	C	5,745	U		. 4,000	•••					

			B4		Weekday	,	Satur	day	Sunda	у	Monda	у
Januar	-		Design Etg Btuh C		Htg Btuh	•	Htg Btuh	-	Etg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OADB		-225,746	0.0	-219,414	0.0	-227,618	0.0	-236,917	0.0	-236,917	0.0
1	24.1		-238,642	0.0	-238,998	0.0	-238,998	0.0	-254,911	0.0	-254,911	0.0
2	23.4		-255,278	0.0	-244,375	0.0	-244,375	0.0	-261,092	0.0	-261,092	0.0
3	23.7	20.0	-262,388	0.0	-240,062	0.0	-240,062	0.0	-256,021	0.0	-256,021	0.0
4	24.7		-268,040	0.0	-234,124	0.0	-234,124	0.0	-249,725	0.0	-249,725	0.0
5	26.3	22.8	-272,512	0.0	-230,472	0.0	-230,472	0.0	-243,735	0.0	-243,735	0.0
6	28.3	25.0	-272,312	0.0	-214,763	.0.0	-216,186	0.0	-226,771	0.0	-226,771	0.0
7	30.8		-169,268	0.0	-142,683	0.0	-184,465	0.0	-184,465	0.0	-142,683	0.0
8	33.5		-145,341	0.0	-123,457	0.0	-162,359	0.0	-162,359	0.0	-123,457	0.0
9	36.4	33.5	-128,653	0.0	-114,164	0.0	-148,595	0.0	-148,595	0.0	-114,164	0.0
10		35.6	-110,019	0.0	-105,467	0.0	-137,073	0.0	-137,073	0.0	-106,467	0.0
11		36.8	-92,268	0.0	-100,312	0.0	-121,748	0.0	-121,748	0.0	-100,312	0.0
12	44.6	37.5	-63,306	0.0	-76,145	0.0	-93,989	0.0	-93,989	0.0	-76,145	0.0
13		38.2	-42,406	0.0	-55,017	0.0	-66,235	0.0	-66,235	0.0	-55,017	0.0
14		38.3		0.0	-59,457	0.0	-67,020	0.0	-67,020	0.0	-59,457	0.0
15		39.0	-47,585	0.0	-65,240	0.0	-68,144	0.0	-68,144	0.0	-65,240	0.0
16		39.1	-56,591		-75,079	0.0	-76,938	0.0	-76,938	0.0	-75,079	0.0
17		38.9	-70,418	0.0	-70,953	0.0	-73,825	0.0	-73,825	0.0	-70,953	0.0
18			-69,991	0.0		0.0	-74,409	0.0	-74,409	0.0	-66,596	0.0
19		37.3	-67,641	0.0	-66,596	0.0	-100,713	0.0	-100,713	0.0	-86,198	0.0
20	40.5		-86,956	0.0	-86,198	0.0	-139,972	0.0	-139,972	0.0	-117,043	0.0
21			-109,873	0.0	-117,043	0.0	-172,181	0.0	-172,181	0.0	-141,771	0.0
22		27.7	-134,270	0.0	-141,771	0.0	-196,554	0.0	-196,554	0.0	-158,959	0.0
23	28.8		-145,427	0.0	-158,959 -171,590	0.0	-217,390	0.0	-217,390	0.0	-171,590	0.0
24	25.9	21.7	-157,090	0.0	-171,590	0.0	22.,224					
			Desig	ın	Weekd	av	Satu	rday	Sun	lay	Mond	ay
Febru		EWAO	Htg Btuh		Htg Btuh		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OADB		-200,058	0.0	-183,975	0.0	~181,401	0.0	-192,024	0.0	-192,024	0.0
1	31.5 29.8		-216,134	0.0	-200,025	0.0	-200,025	0.0	-200,025	0.0	-200,025	0.0
2		25.5	-224,754	0.0	-210,618	0.0	-210,618	0.0	-222,428	0.0	-222,428	0.0
3		24.4	-229,027	0.0	-220,025	0.0	-220,025	0.0	-232,757	0.0	-232,757	0.0
4		23.6	-233,770	0.0	-227,448	0.0	-227,448	0.0	-241,362	0.0	-241,362	0.0
5		23.5	-239,633	0.0	-237,778	0.0	-237,778	0.0	-252,171	0.0	-252,171	0.0
6			-246,182	0.0	-233,244	0.0	-233,244	0.0	-248,042	0.0	-248,042	0.0
7		23.4	-161,617	0.0	-176,974	0.0	-212,796	0.0	-221,455	0.0	-176,974	0.0
8 9		26.1	-139,326	0.0	-160,194	0.0	-207,144	0.0	-207,144	0.0	-160,194	0.0
10		28.7	•	0.0	-150,083	0.0	-192,073	0.0	-192,073	0.0	-150,083	0.0
11		31.3	-114,888	0.0	-137,522	0.0	-173,407	0.0	-173,407	0.0	-137,522	0.0
12	39.0			0.0	-124,208	0.0	-152,972	0.0	-152,972	0.0	-124,208	0.0
13		35.9		0.0	-93,600	0.0	-115,256	0.0	-115,256	0.0	-93,600	0.0
14		36.9		0.0	-68,429	0.0	-85,358	0.0	-85,358		-68,429	0.0
15		36.8		0.0	-73,819	0.0	-83,699	0.0	-83,699		-73,819	0.0
16		36.3		0.0	-82,715	0.0	-90,762	0.0	-90,762		-82,715	0.0
17	44.3			0.0	-89,954	0.0	-98,740	0.0	-98,740		-89,954	0.0
18		35.6		0.0	-83,026	0.0	-89,875	0.0	-89,875		-83,026	
19		36.1		0.0	-72,881	0.0	-83,245	0.0	-83,245		-72,881	0.0
20		35.9		0.0	-90,110	0.0	-107,183	0.0	-107,183		-90,110	0.0
21	39.0			0.0	-112,091	0.0	-135,258	0.0	-135,258		-112,091	
22		33.2		0.0	-122,416	0.0	-150,094	0.0	-150,094		-122,416	
23		31.5		0.0	-132,499	0.0	-164,681	0.0	-164,681		-132,499	
24				0.0	-146,278	0.0	-177,386	0.0	-177,386	0.0	-146,278	0.0
- •												

							a - +		Sunday		Monday	
March			Design		Weekday		Saturd	2	Htg Btuh C		_	lg Ton
Hour	OADB	OAWB	Htg Btuh (Clg Ton	Htg Btuh (Htg Btuh C	0.0	-123,877	0.0	-123,877	0.0
1	40.0	36.8	-155,866	0.0	-112,069	0.0	-112,069	0.0	-149,995	0.0	-149,995	0.0
2	37.3	34.5	-175,470	0.0	-123,738	0.0	-123,739	0.0	-164,856	0.0	-164,856	0.0
3	34.9	32.2	-185,559	0.0	-134,475	0.0	-134,475	0.0	-177,163	0.0	-177,163	0.0
4	32.9	30.3	-191,809	0.0	-148,438	0.0	-149,982		-192,060	0.0	-192,060	0.0
5	31.4	28.8	-193,971	0.0	-180,701	0.0	-192,060	0.0	-208,459	0.0	-208,459	0.0
6	30.4	28.0	-205,107	0.0	-208,459	0.0	-208,459	0.0	-205,799	0.0	-205,799	0.0
7	30.1	27.6	-191,606	0.0	-205,799	0.0	-205,799	0.0	-183,393	0.0	-146,772	0.0
8	30.7	28.0	-125,368	0.0	-146,772	0.0	-177,970	0.0	-174,058	0.0	-136,231	0.0
9	32.5	28.9	-100,557	0.0	-136,231	0.0	-170,220	0.0	-161,922	0.0	-126,918	0.0
10	35.4	30.6	-83,535	0.0	-126,918	0.0	-161,922	0.0	-145,414	0.0	-114,841	0.0
11	38.9	32.6	-67,719	0.0	-114,841	0.0	-145,414	0.0	-123,841	0.0	-101,061	0.0
12	42.9	35.4	-61,798	0.0	-101,061	0.0	-123,841	0.0	-86,366	0.0	-73,065	0.0
13	46.8	38.5	-41,557	0.0	-73,065	0.0	-86,366	0.0	-51,804	0.0	-47,403	0.0
14	50.4	41.3	-20,864	0.0	-47,403	0.0	-51,804	0.0	-45,776	0.0	-45,776	0.0
15	53.2	43.6	-25,778	0.0	-45,776	0.0	-45,776	0.0	-46,700	0.0	-46,700	0.0
16	55.0	45.1	-35,073	0.0	-46,700	0.0	-46,700	0.0	-52,263	0.0	-52,263	0.0
17	55.6	45.4	-48,407	0.0	-52,263	0.0	-52,263	0.0	-43,320	0.0	-43,320	0.0
18	55.3	45.9	-47,854	0.0	-43,320	0.0	-43,320	0.0	-32,314	0.0	-32,314	0.0
19	54.4	46.1	-45,165	0.0	-32,314	0.0	-32,314	0.0	-45,399	0.0	-45,399	0.0
20	52.8	46.3	-64,138	0.0	-45,399	0.0	-45,399	0.0	-58,952	0.0	-58,952	0.0
21	50.8	45.5	-80,772	0.0	-58,952	0.0	-58,952	0.0	-66,876	0.0	-66,876	0.0
22	48.4	43.7	-89,550	0.0	-66,876	0.0	-66,876	0.0	-75,705	0.0	-75,705	0.0
23	45.7	41.6	-96,473	0.0	-75,705	0.0	-75,705	0.0	-92,627	0.0	-92,022	0.0
24	42.9	39.2	-121,310	0.0	-92,022	0.0	-92,627	0.0	-92,021	0.0	,	
												.v
							Catu	rdav	Sunda	v	Monda	2 y
April	L		Desi		Weekd		Satu		Sunda			-
April Hour	OADE		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh -39,687	-
Hour 1	OADE 56.3	50.9	Htg Btuh -48,394	Clg Ton 0.0	Htg Btuh ~39,687	Clg Ton	Htg Btuh -39,687	Clg Ton 0.0	Htg Btuh -39,687	Clg Ton 0.0	Htg Btuh	Clg Ton
Hour	OADE 56.3	50.9	Htg Btuh -48,394 -53,415	Clg Ton 0.0 0.0	Htg Btuh ~39,687 -46,691	Clg Ton 0.0 0.0	Htg Btuh -39,687 -46,691	Clg Ton 0.0 0.0	Htg Btuh -39,687 -46,691	0.0 0.0	Htg Btuh -39,687	Clg Ton
Hour 1 2	56.3 54.2 52.3	50.9 48.9 47.7	Htg Btuh -48,394 -53,415 -58,375	Clg Ton 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248	Clg Ton 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248	Clg Ton 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248	Clg Ton 0.0	Htg Btuh -39,687 -46,691	Clg Ton 0.0 0.0
Hour 1 2 3	56.3 54.2 52.3 50.7	50.9 48.9 47.7 46.4	Htg Btuh -48,394 -53,415 -58,375 -61,723	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650	0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248	0.0 0.0 0.0
Hour 1 2 3 4	56.3 54.2 52.3 50.7 49.5	50.9 48.9 47.7 46.4 545.4	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256	Clg Ton 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236	Clg Ton 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236	0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650	Clg Ton 0.0 0.0 0.0 0.0
Hour 1 2 3 4 5	56.3 54.2 52.3 50.7 49.9	50.9 48.9 47.7 46.4 545.4 44.7	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069	0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236	Clg Ton
Hour 1 2 3 4 5 6	OADE 56.3 54.2 52.3 50.7 49.5 48.6	5 50.9 2 48.9 3 47.7 7 46.4 5 45.4 3 44.7	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757	0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757	Clg Ton
Hour 1 2 3 4 5 6 7	OADE 56.3 54.2 52.3 50.7 49.5 48.6 49.5	50.9 48.9 47.7 46.4 545.4 344.7 544.7	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088	0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069	Clg Ton
Hour 1 2 3 4 5 6 7 8	OADE 56.3 54.2 52.3 50.0 49.1 48.1 49.2	5 50.9 2 48.9 3 47.7 7 46.4 5 45.4 3 44.7 5 44.7 2 44.5 2 44.6	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661	0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088	Clg Ton
Hour 1 2 3 4 5 6 7 8 9	OADE 56.3 54.2 52.3 50.1 49.5 48.1 49.5 51.1	5 50.9 2 48.9 3 47.7 7 46.4 5 45.4 3 44.7 5 44.7 2 44.5 2 44.6 2 46.1	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661	Clg Ton
Hour 1 2 3 4 5 6 7 8 9 10	OADE 56.3 54.2 52.3 50.1 49.5 48.1 49.5 51.3	50.9 48.9 47.7 46.4 5 45.4 44.7 44.5 44.5 44.5 44.5 44.6 44.6	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305	Clg Ton
Hour 1 2 3 3 4 4 5 6 6 7 8 9 10 11 12	OADE 56.3 54.2 52.3 50.0 49.5 48.4 49.5 51.5 54.6	5 50.9 2 48.9 3 47.7 46.4 5 45.4 44.7 44.5 2 44.5 2 44.6 2 46.1 8 48.8 8 51.6	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -65,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 8 9 10 11 12 13	OADE 56.3 54.2 52.3 50.1 49.5 48.4 49.5 51.6 57.61.65.	5 50.9 2 48.9 3 47.7 46.4 5 45.4 44.7 44.5 44.5 44.6 2 44.6 2 44.6 3 48.8 8 51.6 4 54.4	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14	OADE 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 57.66	50.9 48.9 47.7 46.4 545.4 44.7 544.7 244.5 244.6 246.1 88.8 51.6 4.54.4	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15	OADE 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 57.6 68.70.	50.9 48.9 47.7 46.4 545.4 64.7 544.7 244.5 244.6 246.1 848.8 51.6 454.4 456.7 458.3	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16	OADE 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 57.6 66.70.71.	50.9 48.9 47.7 46.4 545.4 44.7 44.5 44.5 44.6 46.1 88.8 51.6 45.4 46.1 87.6 46.1 88.8 51.6 45.4 46.8	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17	OADE 56.3 54.2 52.3 50.3 49.5 48.8 49.5 51.6 57.6 61.6 70.7	50.9 48.9 47.7 46.4 545.4 44.7 44.5 44.5 44.6 46.1 88.8 51.6 45.4 45.4 45.7 46.3 58.3 58.3 58.3 58.3	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17 18	OADE 56.3 54.2 52.3 50.3 49.5 48.8 49.5 51.6 57.6 61.70.70.70.70.	50.9 48.9 47.7 46.4 54.7 544.7 244.5 244.6 246.1 88.8 51.6 454.4 456.7 458.3 058.2 858.5 158.2	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 19 19 19 19 19 19 19 19 19 19 19 19	OADE 56.3 54.2 52.3 50.6 49.5 48.6 49.5 51.6 57.6 61.70.70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6 68.6 70.6	50.9 48.9 47.7 46.4 54.7 544.7 244.5 244.6 246.1 88.8 51.6 454.4 456.7 458.3 058.2 958.3	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17 16 15 20 20	OADE 56.3 54.2 52.3 50.6 49.5 48.6 49.5 57.6 61.6 65.6 68.70.71.70.6 68.6 70.6 70.6 70.6 70.6	50.9 48.9 47.7 46.4 54.7 544.7 244.5 244.6 246.1 88.8 51.6 454.4 456.7 458.3 058.2 958.3 358.5	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 22 22 22 22 2	OADE 56.3 54.2 52.3 50.6 49.5 48.6 49.5 57.6 61.6 65.7 70.7 70.6 68.6 70.6	50.9 48.9 47.7 46.4 54.7 544.7 244.5 244.6 246.1 88.8 51.6 454.4 456.7 458.3 058.2 958.3 358.5 457.9	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0 0 0 0 0 -8,247 -21,656	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0 0 0 0 -8,509	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 13 14 15 16 17 18 19 20 22 22 22 22	OADE 56.3 54.2 52.3 50.7 49.5 48.6 48.9 51 54 57 61 65 68 70 71 70 68 67 68 67 68 67 68 68	50.9 48.9 47.7 46.4 54.7 544.7 244.5 244.6 246.1 88.8 51.6 454.4 456.7 458.3 058.2 958.3 358.5 457.9 356.3	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0 0 0 0 -8,247 -21,656	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 -8,509 -16,133	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0 -8,509	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 0 0 0 0 -8,509	Clg Ton
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17 18 19 20 22 22 22 22 2	OADE 56.3 54.2 52.3 50.7 49.5 48.6 48.9 51 54 57 61 65 68 70 71 70 68 67 68 67 68 67 68 68	50.9 48.9 47.7 46.4 54.7 544.7 244.5 244.6 246.1 88.8 51.6 454.4 456.7 458.3 058.2 958.3 358.5 457.9	Htg Btuh -48,394 -53,415 -58,375 -61,723 -69,256 -62,082 -38,717 -30,494 -28,951 -22,929 -18,093 0 0 0 0 0 0 -8,247 -21,656 -29,138	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 -8,509 -16,133 -23,800	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 0 -8,509 -16,133	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 -8,509 -16,133	Clg Ton	Htg Btuh -39,687 -46,691 -53,248 -58,650 -69,236 -66,069 -54,757 -51,088 -52,661 -48,305 -44,348 -21,546 0 0 0 0 0 -8,509 -16,133	Clg Ton

BLDG I							Satu	~dav	Sund	lav	Monda	у
May			Desig	,	Weekda	-	Htg Btuh	=	Htg Btuh		Htg Btuh	Clg Ton
Hour	ONDB	OAWB	Htg Btuh		Htg Btuh		aty stun	0.0	0	0.0	0	0.0
1	63.3	59.6	0	11.0	0	0.0	0	0.0	0	0.0	0	0.0
2	61.3	57.9	0	2.5	0	0.0	0	0.0	0	0.0	0	0.0
3	59.7	56.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4	58.4	55.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	57.6	54.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6	57.4	54.7	0	0.0	0	0.0		0.0	0	0.0	0	1.6
7	57.9	55.2	-1,705	2.4	0	.1.6	0	0.0	0		0	3.8
8	59.4	55.6	0	6.7	0	3.8	0	0.3	0		0	6.9
9	61.7	56.5	0	12.7	0	6.9	0		0		0	8.5
10	64.6	57.7	0	13.1	0	8.5	0	1.1	0		0	10.0
11	67.8	59.7	0	11.9	0	10.0	0	1.8	c		0	8.3
12	71.0	62.0	0	11.0	0	8.3	0	2.0	c		0	11.4
13	73.9	63.9	0	14.0	0	11.4	0	2.0	,		0	12.8
14	76.3	65.3	0	15.6	0	12.8	0				0	14.9
15	77.7	66.4	0	17.4	0	14.9	0		,		0	10.8
16	78.2	66.4	0	12.6	0	10.8	0		,		0	9.2
17	78.0	66.3	0	10.4	0	9.2	0			3.8	0	7.3
18	77.2	66.2	0	8.0	0	7.3	0			3.4	0	7.0
19	76.0	66.5	0	7.5	0	7.0	0				0	6.7
20	74.3	66.4	0	6.5	0	6.7	0			2.9	0	3.8
21	72.3	66.5	0	3.5	О	3.8	C			2.3	0	2.5
22	70.1	64.9	0	2.1	0	2.5	C			1.8	0	1.2
23	67.8	63.2	0	0.7	0	1.2	C	1.2		1.2		0.2
24	65.5	61.4	О	0.3	0	0.2	ď	0.2		0.2	0	4.0
									g.,	nday	Mono	lav
June			Des	1gp	Week	dav	Sat	urdav	ou	uuay	*	
				-						h Clg Ton	Htg Btuh	Clg Ton
Hour	OADB		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btul	Clg Ton	Htg Btu	h Clg Ton	Htg Btuh O	Clg Ton 0.8
Hour 1	66.2	65.3	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton 0.8	Htg Btul	Clg Ton	Htg Btu		-	
Hour 1 2	66.2 65.3	63.9	Htg Btuh 0 0	Clg Ton 1.6 1.0	Htg Btuh O	Clg Ton 0.8 0.1	Htg Btul	Clg Ton 0.8	Htg Btu	0.8	0	0.8
Hour 1 2 3	66.2 65.3 64.5	65.3 63.9 62.4	Htg Btuh 0 0 0	Clg Ton 1.6 1.0 0.9	Htg Btuh O O	0.8 0.1 0.0	Etg Etul ((Clg Ton 0.8	Etg Etu	0 0.8	0	0.8 0.1
Hour 1 2 3	66.2 65.3 64.5	65.3 63.9 62.4 61.3	Htg Btuh 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8	Htg Btuh 0 0 0	Clg Ton 0.8 0.1 0.0 0.0	Htg Btul (((Clg Ton 0.8 0.1 0.0	Etg Etu	0 0.8 0 0.1 0 0.0	0	0.8 0.1 0.0
Hour 1 2 3 4 5	66.2 65.3 64.5 64.0	65.3 63.9 62.4 61.3 60.8	Etg Etuh 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1	Htg Btuh 0 0 0 0	Clg Ton 0.8 0.1 0.0 0.0	Htg Btul ((((Clg Ton 0.8 0.1 0.0 0.0	Etg Btu	0 0.8 0 0.1 0 0.0 0 0.0	0 0 0	0.8 0.1 0.0 0.0
Hour 1 2 3 4 5	66.2 65.3 64.5 64.0 63.6	65.3 63.9 662.4 61.3 8 60.8 61.2	Htg Btuh 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1	Htg Btuh 0 0 0 0 0	Clg Ton	Etg Stul	Clg Ton 0.8 0.01 0.00 0.00 0.00 0.00	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0	0 0 0	0.8 0.1 0.0 0.0
Hour 1 2 3 4 5 6	66.2 65.3 64.5 64.0 63.8 64.2	65.3 63.9 662.4 661.3 60.8 61.2 61.7	Htg Btuh 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3	Htg Btuh 0 0 0 0	Clg Ton	Htg Btul	0.8 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0	0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5
Hour 1 2 3 4 5 6 7 8	66.2 65.3 64.5 64.6 63.8 64.2 65.1	65.3 63.9 62.4 661.3 60.8 61.2 61.7 62.3	Htg Btuh 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5	Htg Btuh 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Clg Ton 0.8 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0	0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3
Hour 1 2 3 4 5 6 7 8	66.2 65.3 64.5 64.0 63.6 64.2 65.3 66.8	65.3 63.9 62.4 61.3 60.8 61.2 61.7 62.3 63.3	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1	Htg Btuh 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Clg Ton 0.8 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1	0 0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9
Hour 1 2 3 4 5 6 7 8 9	66.2 65.3 64.5 64.0 63.8 64.2 65.1 66.8	65.3 63.9 62.4 61.3 60.8 61.2 61.7 62.3 63.3 65.2	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5	Htg Btuh 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Clg Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2	0 0 0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8
Hour 1 2 3 4 5 6 6 7 8 9 10 11	66.2 65.3 64.5 64.0 63.8 64.2 65.1 66.8 69.3	65.3 63.9 62.4 61.3 60.8 61.2 61.7 62.3 63.3 63.3 65.2 4 57.5	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.01 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.02 0.02	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9	0 0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6
Hour 1 2 3 4 5 6 6 7 8 8 9 10 11 12	66.2 65.3 64.5 64.0 63.6 64.2 65.1 66.8 69.3 72.1	65.3 63.9 662.4 61.3 60.8 61.2 61.7 62.3 63.3 63.3 65.2 67.5 69.8	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.01 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.02 0.02	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4	0 0 0 0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4
Hour 1 2 3 4 5 6 6 7 8 8 9 10 11 12 13	66.2 65.3 64.5 64.0 63.8 64.2 65.1 66.6 69.2 72.3 75.4	65.3 63.9 662.4 661.3 660.8 661.2 661.7 662.3 65.2 67.5 69.8 7 71.6	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4	0 0 0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5
Hour 1 2 3 4 4 5 6 6 7 8 9 10 11 12 13 14	66.2 65.3 64.5 64.0 63.8 64.2 65.1 66.6 69.3 72.3 75.4 80.8	65.3 63.9 62.4 61.3 60.8 61.2 61.7 62.3 63.3 65.2 67.5 69.8 71.6 272.7	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0	0 0 0 0 0 0 0 0	0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14	66.2 65.3 64.5 64.2 65.1 66.8 69.3 72.3 75.4 80.3	65.3 63.9 662.4 661.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.6	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	66.2 65.3 64.5 64.2 65.1 66.8 69.3 72.3 75.4 80.8	65.3 63.9 662.4 661.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.6 2 73.1	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4
Hour 1 2 3 4 4 5 6 6 7 8 9 10 11 12 13 14 15 16 17	66.2 65.3 64.5 64.0 63.6 64.2 65.3 66.6 69.3 72.3 75.4 80.3 82.4 82.6	65.3 63.9 662.4 61.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.6 2 73.1	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1 13.7	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	66.2 65.3 64.5 64.0 63.6 64.2 65.3 66.6 69.3 72.3 75.4 80.3 82.3 82.3	65.3 63.9 662.4 61.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.6 2 73.1 9 72.7 8 71.6	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1 13.7 11.5	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7 0 7.3 0 6.7		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6 8.7
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	66.2 65.3 64.5 64.2 65.3 66.8 69.3 72.3 75.4 80.7 82.2 82.3 80.3 78.4	65.3 63.9 662.4 661.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.8 2 73.1 9 72.7 8 71.6	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 0.19.5 0.20.9 16.1 0.13.7 0.11.5 0.17	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7 0 7.3 0 6.7 0 7.7 0 4.6 0 3.6		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6 8.7 7.9
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	66.2 65.3 64.5 64.2 65.3 66.6 69.3 72.3 75.4 80.7 82.2 82.3 82.3 78.4	65.3 63.9 662.4 661.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.8 2 73.1 9 72.7 8 71.6 3 71.3	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1 13.7 11.5	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.0	Btg Btu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7 0 7.3 0 6.7 0 7.7 0 4.6 0 3.6 0 2.8		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6 8.7 7.9 4.4
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	66.2 65.3 64.5 64.0 63.8 64.2 65.1 66.8 69.3 72.3 75.4 80.3 82.4 82.4 82.4 82.4 78.4 78.4 78.4	65.3 63.9 662.4 661.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.8 2 73.1 9 72.7 8 71.6 3 71.6 9 72.8 7 71.6 9 72.8 9 72.7 8 71.6 9 72.8 9 72.7 8 71.6 9 72.8 9 72.7 8 71.6 9 72.7 8 72.7 8 72.7 8 72.7 8 72.7 8 72.7 8 72.8 9 72.7 8 72.7 8 72.7 8 72.7 8 72.7 8 72.8 8 72.7 8 72.8 8 72.0 8 72.0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1 13.7 11.5 10.7 9.8	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.0	Etg Etu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7 0 7.3 0 6.7 0 7.7 0 4.6 0 3.6 0 2.8		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6 8.7 7.9 4.4 2.9
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	66.2 65.3 64.5 64.2 65.1 66.6 69.3 72.3 75.4 80.3 82.4 82.6 82.6 78.6 73.6 73.6	65.3 63.9 662.4 61.3 60.8 61.2 61.7 62.3 63.3 65.2 4 67.5 4 69.8 7 71.6 7 72.8 7 72.8 7 72.8 7 73.1 9 71.6 9 71.6 9 71.6	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1 13.7 11.5 10.7 9.8 6.3	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.	Etg Etu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7 0 7.3 0 6.7 0 7.7 0 4.6 0 3.6 0 2.8 0 2.0		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6 8.7 7.9 4.4 2.9 1.3
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	66.2 65.3 64.5 64.0 63.8 64.2 65.1 66.8 69.3 72.3 75.4 80.3 82.4 82.4 82.4 82.4 76.7 73.4 73.4 74.6 75.6	65.3 63.9 662.4 61.3 60.8 61.2 61.7 8 62.3 3 63.3 1 65.2 4 67.5 4 69.8 7 71.6 2 72.7 8 72.8 2 73.1 9 72.7 8 71.6 3 71.6 7 71.6 7 71.6 8 71.6 9 71.6 9 71.6 9 71.6 9 71.6	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 1.6 1.0 0.9 0.8 0.1 0.3 9.5 12.7 15.1 16.5 15.1 14.1 17.5 19.5 20.9 16.1 13.7 11.5 10.7 9.8 6.3 4.2	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Etg Btul	Cly Ton 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.	Etg Etu	0 0.8 0 0.1 0 0.0 0 0.0 0 0.0 0 0.0 0 0.1 0 1.2 0 2.2 0 2.9 0 3.4 0 5.0 0 6.7 0 7.7 0 7.3 0 6.7 0 7.7 0 4.6 0 3.6 0 2.8		0.8 0.1 0.0 0.0 0.0 0.0 5.5 11.3 13.9 14.8 13.7 12.6 16.4 17.5 19.4 14.4 12.2 9.6 8.7 7.9 4.4 2.9 1.3

			·		Weekd	av	Satur	day	Sunda	у	Monda	у
July			Desi		Htg Btuh		Htg Btuh		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OADB		Htg Btuh O	Clg Ton 3.9	Htg Btun O	2.4	0	2.3	0	2.4	0	2.4
1		71.0	0	2.9	0	1.5	0	1.5	0	1.6	0	1.6
2	69.8	68.8	0	2.6	0	1.3	0	1.3	0	1.3	0	1.3
3	68.9		0	1.9	0	1.1	0	1.1	0	1.1	0	1.1
4	68.2		0	1.9	0	1.0	0	1.0	0	1.0	0	1.0
5	68.0	65.2	0	2.0	0	0.4	0	0.4	0	0.4	0	0.4
6		64.9 65.3	0	11.8	0	10.0	0	1.2	0	1.2	0	10.0
7		65.6	0	14.6	0	12.7	0	2.3	0	2.3	0	12.7
8 9		65.7	0	17.7	0	15.7	0	3.7	0	3.7	0	15.7
10		66.5	0		0	17.0	0	5.8	0	5.8	0	17.0
11		67.9	0		0	15.6	0	7.0	0	7.0	0	15.6
12		69.9	0		0	14.3	0	8.0	0	8.0	0	14.3
13		71.3	0	19.8	C	18.2	0	8.8	0	8.8	0	18.2
14		72.5	0	20.8	C	19.2	0	9.1	0	9.1	0	19.2
15		73.9	0	21.9	c	20.9	0	9.7	0	9.7	0	20.9
16		75.3	o	18.1	C	16.2	0	9.5	0	9.5	0	16.2
17		75.5	c	15.2	(13.7	0	8.5	0	8.5	0	13.7
18		76.2	c	13.0	(11.4	0	7.9	0	7.9	0	11.4 10.6
19	82.8	76.7	c	11.9	(10.6	0	6.9	0	6.9	0	9.8
20	79.9	78.6	c	11.8	(9.8	0	5.9	0	5.9	0	6.6
21	77.4	78.8	c	8.4	(6.6	0	5.1	0	5.1	0	5.2
22	75.2	78.0	(6.9		5.2	0	4.4	0	4.4	0	3.1
23	73.4	75.4	(4.8	•	3.1	0	3.2	0	3.2 2.7	0	2.6
24	72.0	73.0	,	4.3	1	2.6	0	2.7	О	2.1	·	2.0
			Do	sign	Wee	kday	Satu	ırday	Sun	tay	Mone	iay
Augus		o ver		h Clg Ton		h Clg Ton	Htg Btuh		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OADB		_	0 2.2	-	0 0.9	0	0.9	0	0.9	0	0.9
1 2		63.5		0 1.9		0 0.8	0	0.8	0	0.8	0	0.8
3		62.2		0 1.2		0 0.7	0	0.7	0	0.7	0	0.7
4		61.1				0.0	0	0.0	0	0.0	0	0.0
				n 1.0		0.0	•					0.0
				0 1.0		0 0.0	0	0.0	0	0.0	0	
5 6	65.4	60.7		0 1.0					0	0.0	0	0.0
6	65.4 65.8	60.7 60.7		0 1.0 0 1.0		0.0	0	0.0			0	0.0 6.4
6 7	65.4 65.8 66.8	60.7 60.7 61.2		0 1.0 0 1.0		0.0	0	0.0	0	0.0 0.4	0 0 0	0.0 6.4 10.7
6 7 8	65.4 65.8 66.6	60.7 60.7 61.2 61.6		0 1.0 0 1.0 0 9.0		0 0.0 0 0.0 0 6.4	o o o	0.0 0.0 0.4	0	0.0 0.4 1.1 1.9	0 0 0	0.0 6.4 10.7 13.5
6 7	65.4 65.8 66.6 68.6	60.7 60.7 61.2		0 1.0 0 1.0 0 9.0 0 12.0		0 0.0 0 0.0 0 6.4 0 10.7	0 0 0	0.0 0.0 0.4 1.1	0 0 0	0.0 0.4 1.1 1.9 2.7	0 0 0 0	0.0 6.4 10.7 13.5 14.4
6 7 8 9	65.4 65.8 66.6 68.6 71.2	60.7 60.7 61.2 61.6 2 62.5		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5	0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7	0 0 0	0.0 0.4 1.1 1.9 2.7 3.8	0 0 0 0	0.0 6.4 10.7 13.5 14.4
6 7 8 9 10	65.4 65.8 66.8 71.2 74.2	60.7 60.7 61.2 61.6 62.5 63.6		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4	0 0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7 3.8	0 0 0 0	0.0 0.4 1.1 1.9 2.7 3.8 6.2	0 0 0 0 0	0.0 6.4 10.7 13.5 14.4 13.3
6 7 8 9 10	65.4 65.8 66.8 71.3 74.3 77.3	60.7 60.7 61.2 61.6 62.5 63.6 7 65.1 9 66.8		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3	0 0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2		0.0 6.4 10.7 13.5 14.4 13.3 12.4
6 7 8 9 10 11	65.4 65.8 66.8 71.7 74.7 80.0	60.7 60.7 61.2 61.6 62.5 63.6 7 65.1 9 66.8		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3	0 0 0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2		0.0 0.4 1.1 1.9 2.7 3.6 6.2 7.2 7.4		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3
6 7 8 9 10 11 12	65.4 65.8 66.8 68.6 71.7 74 77.8 83 85	60.7 60.7 61.2 61.6 62.5 63.6 7 65.1 9 66.8 4 68.2		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3	0 0 0 0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4		0.0 0.4 1.1 1.9 2.7 3.6 6.2 7.2 7.4 7.6		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3
6 7 8 9 10 11 12 13	65.4 65.8 66.8 68.6 71.3 74.7 77.80.83.85.85.85.	60.7 60.7 61.2 61.6 62.5 63.6 7 65.1 9 66.8 4 68.2 0 69.7		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 19.1		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9	0 0 0 0 0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6		0.0 0.4 1.1 1.9 2.7 3.6 6.2 7.2 7.4 7.6 7.1		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9
6 7 8 9 10 11 12 13 14	65.4 65.8 66.8 68.6 71.3 74.3 77.8 80.8 85.8 85.8	60.7 60.7 61.2 61.6 62.6 63.6 765.1 966.8 68.2 69.7 670.7		0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6	0 0 0 0 0 0 0 0	0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1		0.0 0.4 1.1 1.9 2.7 3.6 6.2 7.2 7.4 7.6 7.1 6.5		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9
6 7 8 9 10 11 12 13 14 15	65.4 65.8 66.6 68.6 71.7 74.7 80.8 83.8 85.8 85.8	60.7 60.7 61.2 61.6 62.6 63.6 765.1 966.8 468.2 69.7 670.7 070.5		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5		0.0 0.4 1.1 1.9 2.7 3.6 6.2 7.2 7.4 7.6 7.1 6.5 5.9		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5
6 6 7 8 8 9 10 11 12 13 14 15 16 17	65.4 65.8 66.6 68.6 71 74 77. 80. 83. 85. 85. 85.	4 60.7 3 60.7 3 61.2 5 61.6 2 62.5 3 63.6 7 65.1 9 66.8 4 68.2 0 69.7 6 70.7 0 70.5 6 70.4		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0 0 13.1 0 10.8		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5 0 8.4		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5 8.4
6 6 7 8 8 9 10 11 12 13 14 15 16 17 18	65.4 65.8 66.8 71.7 74.77. 80.83.85.85.85.85.783.878.78.78.78.78	4 60.7 3 60.7 3 61.2 5 61.6 2 62.5 3 63.6 7 65.1 9 66.8 4 68.2 0 69.7 0 70.5 6 70.4 3 70.7		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0 0 13.1 0 10.8 0 9.3		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5 0 8.4		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5 8.4 7.7
6 7 8 8 9 10 11 12 13 14 15 16 17 18 19 19	65.4 65.8 66.8 71.7 74.7 80.8 85.8 85.8 85.7 83.7 85.7	60.7 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 70.7 70.5 670.4 70.7		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0 0 13.1 0 10.8		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5 0 8.4 0 7.7		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.8		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.8		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5 8.4 7.7
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	65.4 65.8 66.8 68.6 71.7 74.7 80.8 85.8 85.8 85.7 85.7 87.7 87.7 87.7 87	6 60.7 6 61.2 6 61.6 6 62.5 6 63.6 7 65.1 9 66.8 4 68.2 0 69.7 0 70.5 6 70.4 3 70.7 7 70.7 1 71.9		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0 0 13.1 0 10.8 0 9.3		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5 0 8.4 0 7.7 0 4.7		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.1 2.6		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.8 3.1 2.6		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5 0 8.4 7.7 0 4.7
6 6 7 8 8 9 10 11 12 13 14 15 16 17 18 19 20 21	65.4 65.8 66.6 68.6 71.7 74.7 80.8 85.8 85.8 85.7 85.7 87.7 87.7	60.7 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7 770.7 171.5 972.4		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0 0 13.1 0 10.8 0 9.3 0 6.2 0 4.8		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5 0 8.4 0 7.7 0 4.7 0 3.3 0 1.5		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.1 2.6 1.6		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.1 2.6 1.6		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5 0.9.
6 6 7 8 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	65.4 65.8 66.8 68.6 71.7 77.8 80.8 85.8 85.8 85.7 85.7 78.7 77.7 77.7	60.7 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7 77.7 171.9 972.4 871.1		0 1.0 0 1.0 0 9.0 0 12.0 0 15.9 0 16.7 0 15.2 0 13.8 0 17.1 0 20.3 0 16.0 0 13.1 0 10.8 0 9.3 0 6.2		0 0.0 0 0.0 0 6.4 0 10.7 0 13.5 0 14.4 0 13.3 0 12.4 0 16.3 0 17.3 0 18.7 0 13.9 0 11.6 0 9.5 0 8.4 0 7.7 0 4.7		0.0 0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.1 2.6 1.6		0.0 0.4 1.1 1.9 2.7 3.8 6.2 7.2 7.4 7.6 7.1 6.5 5.9 4.7 3.8 3.8 3.1 2.6		0.0 6.4 10.7 13.5 14.4 13.3 12.4 16.3 17.3 18.7 13.9 11.6 9.5 0 8.4 7.7 0 4.7

							Satu	dav	Sund	ay	Monday	y
Septes	ber		Desig		Weekda		Htg Btuh			Clg Ton		Clg Ton
Hour	OADB	OAWB	Htg Btuh		Htg Btuh	=	Htg Btun O	0.0	0	0.0	0	0.0
1	61.8	61.5	0	0.5	0	0.0	0	0.0	0	0.0	0	0.0
2	60.8	59.7	0	0.3	0	0.0	0	0.0	0	0.0	o	0.0
3	60.0	58.4	0	0.0	О	0.0		0.0	0	0.0	0	0.0
4	59.4	57.1	0	0.0	0	0.0	0		0	0.0	0	0.0
5	59.2	56.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6	59.6	56.1	О	0.0	0	0.0	0	0.0	0	0.0	0	1.5
7	60.6	56.7	0	3.1	0	1.6	0	0.0	0	0.0	0	5.7
8	62.4	57.9	0	9.6	0	5.7	0	0.0	0	0.0	0	12.1
9	65.1	58.6	0	13.2	o	12.3	0	1.3	0	1.3	o	12.9
10	68.1	59.6	o	14.2	0	12.9	0	2.6	0	2.6	o	11.4
11	71.6	61.1	0	13.1	0	11.4	0	2.9	0	2.9	0	10.2
12	74.8	62.7	0	11.9	0	10.2	0	3.1	0	3.1	0	13.6
13	77.2	64.6	0	15.7	0	13.6		5.4	0	5.4	0	15.4
14	78.9	66.0	0	16.9	0	15.4	0	5.9	0		o	16.8
15	79.5	67.1	0	18.2	0	16.8	0	5.4	0		0	12.2
16	78.9	67.5	0	14.1	0	12.2	0		0		o	9.8
17	77.4	67.9	0	12.0	0	9.8	0	4.7	0		0	7.3
18	75.2	68.0	0	9.2	0	7.3	0	3.7	0		0	6.7
19	72.5	69.3	0	8.4	0	6.7	0	2.8	0		0	6.0
20	69.9	70.0	0	7.6	0	6.0	0	1.9	0		0	2.9
21	67.7	69.0	0	4.0	0	2.9	0				0	1.5
22	65.7	67.3	0	2.5	0	1.5	0		0		0	0.5
23	64.0	65.4	0	1.2	0	0.5	0		C		0	0.0
24	62.8	63.6	0	0.8	0	0.0	0	0.0	C	0.0	·	•••
Octob	NAT.		Des:	ign	Week	day	Sat	urday		-		_
Hour	OADE	OAWB	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	-	Clg Ton	Htg Btuh	
1	50.7		-3,267	0.0	-57,888	0.0	-57,888	0.0	-57,888		-57,888	0.0
2	48.4	44.0	0	0.0	-65,664	0.0	-65,664	0.0	-65,664		-65,664	0.0
3	46.3	42.0	-23,212	0.0	-72,779	0.0	-72,779	0.0	-72,779		-72,779	0.0
4	44.6	40.8	-69,043	0.0	-78,453	0.0	-78,453	0.0	-78,45		-78,453	0.0
5		39.7	-83,172	0.0	-89,149	0.0	-89,149	0.0	-89,149		-89,149	0.0
6	42.0	39.1	-76,048	0.0	-97,763	0.0	-97,512	0.0	-97,51		-97,512	0.0
7	42.	38.9	-59,062	0.0	-76,677	0.0	-76,677	0.0			-76,677	0.0
8	43.	39.8	-49,553	0.0	-69,859	0.0	-69,859	0.0			-69,859	0.0
9	46.	3 41.5	-45,651	0.0	-68,868	0.0	-68,868				-68,868 -60,123	0.0
10	50.	7 43.0	-37,446	0.0	-60,123	0.0	-60,12				-50,719	0.0
11	56.	0 45.7	-29,909	0.0	-50,719	0.0	-50,719				-23,934	0.0
12	61.	2 49.1	-5,554	0.0	-23,934	0.0	-23,93			_	-23,934	
13	65.	6 52.3	-1,930	0.0	(0.0		0.0		0.0	0	
14	68.	5 54.1	c	0.0	(0.0		0.0		0.0	0	_
15	69.	6 54.8	c	0.0	(0.0		0.0		0.0		
16		3 54.0	c	0.0	-3,256	5 0.0	-3,25				-3,256 0	
17		5 54.2	C	0.0	(0.0		0 0.0		0.0	0	
18		3 54.6	ď	0.0	(0.0		0.0		0.0	0	
19		6 55.9	-1,410	0.0	•	0.0		0.0		0 0.0		
20			-26,557	7 0.0	-14,96	7 0.0					-14,967	
		2 54.5	-36,553	0.0	-23,14	в 0.0					-23,148 -31,653	
21					-31,65	3 0.0	-31,65	3 0.0	-31,65	3 0.0	-31,603	
21 22	58.	6 52.4	-45,70	7 0.0	-31,65	, ,,,					_40 941	
		6 52.4 0 50.0	-45,707 -53,278				-40,24	7 0.0			-40,247 -49,243	

BLDG 1	350	BABERUR	FI DEGREE								_	
			Desig	ın	Weekday	,	Saturd	lay	Sunday		Monday	
Novemb	OADB	OAWB	Htg Btuh		Htg Btuh		Htg Btuh C	lg Ton	Htg Btuh C		Htg Btuh C	0.0
Hour		40.3	- B 0,616	0.0	-81,938	0.0	-81,938	0.0	-81,938	0.0	-81,938	
1	43.8	38.9	-84,470	0.0	-101,127	0.0	-98,298	0.0	-98,298	0.0	-98,298	0.0
2	42.0	37.5	-87,345	0.0	-109,622	0.0	-109,622	0.0	-109,622	0.0	-109,622	0.0
3		36.3	-99,662	0.0	-114,568	0.0	-114,568	0.0	-123,975	0.0	-123,975	0.0
4	39.4		-109,077	0.0	-118,319	0.0	-118,319	0.0	-128,798	0.0	-128,798	
5	38.7		-114,762	0.0	-126,387	0.0	-126,387	0.0	-137,465	0.0	-137,465	0.0
6			-103,836	0.0	-124,644	0.0	-124,888	0.0	-127,627	0.0	-127,627	0.0
7		36.3 38.2	-71,041	0.0	-85,135	0.0	-97,217	0.0	-97,217	0.0	-85,135	0.0
8	41.0		-57,218	0.0	-71,502	0.0	-80,782	0.0	-80,782	0.0	-71,502	0.0
9	43.8		-54,279	0.0	-66,653	0.0	-72,117	0.0	-72,117	0.0	-66,653	0.0
10	47.3		-47,630	0.0	-59,611	0.0	-60,278	0.0	-60,278	0.0	-59,611	0.0
11		45.4	-43,657	0.0	-55,951	0.0	-55,951	0.0	-55,951	0.0	-55,951	0.0
12		47.5		0.0	-36,985	0.0	-36,985	0.0	-36,985	0.0	-36,985	0.0
13		49.2	-25,539	0.0	-16,940	0.0	-16,940	0.0	-16,940	0.0	-16,940	0.0
14	59.3		-5,544	0.0	-22,576	0.0	-22,576	0.0	-22,576	0.0	-22,576	0.0
15	59.9		-11,165	0.0	-30,001	0.0	-30,001	0.0	-30,001	0.0	-30,001	0.0
16	59.7		-19,895		-39,989	0.0	-39,989	0.0	-39,989	0.0	-39,989	0.0
17	59.0		-32,542	0.0	-33,832	0.0	-33,832	0.0	-33,832	0.0	-33,832	0.0
18	57.9		-30,821	0.0	-24,991	0.0	-24,991	0.0	-24,991	0.0	-24,991	0.0
19		51.0	-26,546	0.0	-38,794	0.0	-38,794	0.0	-38,794	0.0	-38,794	0.0
20		49.7	-43,863	0.0		0.0	-52,924	0.0	-52,924	0.0	-52,924	0.0
21	52.5		-59,095	0.0	-52,924	0.0	-60,174	0.0	-60,174	0.0	-60,174	0.0
22		46.2	-66,224	0.0	-60,174	0.0	-67,474	0.0	-67,474	0.0	-67,474	0.0
23		1 44.0	-72,103	0.0	-67,474	0.0	-74,821	0.0	-74,821	0.0	-74,821	0.0
24	45.9	9 42.4	-76,653	0.0	-74,821	0.0	74,021					
			_		Weekd	lav	Satu	rday	Sund	ау	Monda	ту
Dece			Des	-	Htg Btuh		Htq Btuh		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour			-	Clg Ton	-166,613	0.0	-160,491	0.0	-166,613	0.0	-166,613	0.0
1			-136,328		-177,030	0.0	-177,030	0.0	-181,344	0.0	-181,344	0.0
2			-161,049		-185,700	0.0	-185,700	0.0	-198,494	0.0	-198,494	0.0
3		5 25.9			-193,674	0.0	-193,674	0.0	-207,565	0.0	-207,565	0.0
4					-199,215	0.0	-199,215	0.0	-214,075	0.0	-214,075	0.0
5		1 24.0					-210,725	0.0	-227,142	0.0	-227,142	0.0
6		4 23.6			-210,725		-205,049	0.0	-221,401	0.0	-221,401	0.0
7		2 23.3			-208,067		-193,484	0.0	-195,120	0.0	-156,351	0.0
8		8 24.0			-156,351		-182,054	0.0	-182,054	0.0	-142,741	0.0
9					-142,741		-169,079	0.0	-169,079	0.0	-139,248	0.0
10					-139,248 -134,317	_	-154,807		-154,807	0.0	-134,317	0.0
11		.4 30.3			-127,081		-143,697		-143,697	0.0	-127,081	0.0
12					-100,194		-110,182		-110,182	0.0	-100,194	0.0
13		.2 35.1			-75,166		-81,476		-81,476	0.0	-75,166	0.0
14		.8 36.9					-81,730		-81,730	0.0	-77,004	0.0
19		.6 38.1					-85,798		-85,798	0.0	-81,940	0.0
10		.2 38.5					-93,306		-93,306	0.0	-88,123	0.0
1		.9 38.							-84,017		-80,242	0.0
1	8 44	.3 39.0							-75,136		-69,615	0.0
1		.3 39.							-94,808		-87,039	0.0
2		.9 38.							-117,817		-108,635	0.0
2		.2 37.									-119,652	0.0
2		.3 35.						_			-130,087	
2		.2 33.									-139,095	
2	4 34	.1 31.	4 -154,77	71 0.0	-139,09	5 0.0	-130,91		,			

PAGE 52

BUILDING TEMPERATURE PROFILES - ALTERNATIVE 1

1 1 1 2 1

Day Type

BLDG 1350 BASERUN FT LEONARD WOOD

BUILDING TEMPERATURE PROFILES ------

Room Number -----Temperature 1 2 3 4 5 Rance (F) 120.2 365.1 80.4 95.3 86.3 Max. Temp. 8 19 12 21 4 17 7 19 4 16 Mo./Hr. 1 5 1 1 Day Type Number of Hours 2,924 5,880 0 0 0 Above 100 0 0 0 31 0 95 - 100 0 1,555 0 0 90 - 95 343 0 0 1,842 0 85 - 90 338 0 0 305 849 80 - 85 36 30 192 770 730 1,863 75 - 80 396 570 6,421 1,711 5,692 70 - 75 65 - 70 4,662 2,118 1,569 2,617 356 60 - 65 0 0 0 0 0 55 - 60 0 0 0 0 0 0 0 0 0 0 50 - 55 0 0 0 0 Below 50 Min. Temp. 61.4 67.0 70.0 69.9 70.0 5 5 1 1 1 1 1 23 1 1 Mo./Er.

PAGE 53

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1

BLDG 1350 BASERUN FT LEONARD WOOD

	ELEC On Peak	DEMAND On Peak	GAS On Peak	GAS DMND On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	26,896	68	1,360	. 3
Feb	24,306	68	1,254	· 3
March	27,659	68	967	3
April	25,190	68	257	1
May	25,059	69	0	0
June	26,135	73	0	0
July	27,253	75	0	0
Aug	27,290	73	0	0
Sept	24,024	70	0	0
Oct	26,703	68	378	1
Nov	25,906	68	613	2
Dec	26,515	68	1,280	3
Total	312,936	75	6,109	3

Building Energy Consumption =

94,977 (Btu/Sq Ft/Year)

Floor Area = 17,677 (Sq Ft)

Source Energy Consumption = 217,655 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

----- EQUIPMENT ENERGY CONSUMPTION-----

	Equip					•••		mption		800	Oct	Nov	Dec	Total
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	OCL			
)	LIGHTS								9872	8950	9604	8950	9070	111,203
	ELEC	9337	8442	9872	8950	9604	9484	9070	32.2	32.2	32.2	32.2	32.2	32.2
	PK	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	72.2	5212			
1	MISC LD							7564	7907	7394	7793	7394	7564	90,948
	ELEC	7678	6939	7907	7394	7793	7622 24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	PK	24.1	24.1	24.1	24.1	24.1	24.1	24.1	•					
2	MISC LD					_	0	0	o	0	0	0	0	0
	GAS	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•				
3	MISC LD						_		0	0	0	0	0	0
	OIL	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •			
4	MISC LD					_	0	0	0	o	0	o	0	О
	P STEAM	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •				
5	MISC LD		_	•	0	0	0	0	0	0	0	0	o	0
	P HOTH20	0	0	0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0		*							
6	MISC LD	•	0	0	0	0	0	0	0	0	0	0	0	0
	b CHIFF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0												
1	EQ11708				D COMP <	20 TONS 712	1253	1866	1384	805	0	0	0	6,019
	ELEC	0	0	0.0	0.0	5.3	6.9	8.1	6.9	5.6	0.0	0.0	0.0	8.1
	PK	0.0	0.0	0.0	0.0	3.3	0.5	• • • •						
1	EQ5200			DENSER F		96	172	252	188	108	0	0	0	816
	ELEC	0	0	0	0.0	0.8	1.0	1.1	0.9	0.8	0.0	0.0	0.0	1.3
	PK	0.0	0.0	0.0	0.0									
1	EQ5313			TROLS		114	125	195	158	99	0	0	0	69:
	ELEC	0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.
	PK	0.0												
2	2 EQ1170S				ND COMOP O	20 TONS 1783	2537	3091	2652	1854	0	0	0	11,91
	RLEC	0	0	0	0.0	8.9	10.8	12.0	10.8	9.3	0.0	0.0	0.0	12.
	PK	0.0	0.0	0.0	0.0	0.9	10.0							

PAGE 55

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD

	BLEC	0	o	0	0	228	341	413	355	239	0	0	0	1,576
	PK	0.0	0.0	0.0	0.0	1.3	1.5	1.6	1.5	1.3	0.0	0.0	0.0	1.6
			CONTR	OT S										
	BQ5313	0	0	0	0	150	169	223	195	144	0	0	0	881
	RLEC PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
i	P.K.	0.0												
	EQ4003			NTRIF. F		0	. 0	0	0	0	1665	1611	1665	11,387
	ELEC	1665	1504	1665	1611 2.2	2.2	0.0	0.0	0.0	0.0	2.2	2.2	2.2	2.2
	PK	2.2	2.2	2.2	2.2	2.2	0.0							
1	EQ4003		FC CI	ENTRIF. I						0	0	0	o	0
	ELEC	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••		
,	EQ4381		PROP	ELLER FA	N								120	1,638
-	RLEC	139	126	139	135	139	135	139	139	135	139	135	139 0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	V/-
	TO 4 3 8 3		PROP	ELLER FA	N									_
2	EQ4381 ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EQ4003		FC C	ENTRIF.	FAN C.V.									
3	ELEC	1665	1504	1665	1611	1665	1611	1665	1665	1611	1665	1611	1665	19,605
	PK	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	EQ4003		FC (ENTRIF.	FAN C.V.									_
J	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EQ4003		FC (CENTRIF.	FAN C.V.									
•	ELEC	1665	1504	1665	1611	0	0	0	0	0	1665	1611	1665	11,387
	PK	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	2.2
	EQ4003		FC	CENTRIF.	FAN C.V									_
•	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EQ4003		FC	CENTRIF.	FAN C.V									
9	ELEC	2775	2507	2775	2686	2775	2686	2775	2775	2686	2775	2686	2775	32,675
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	EQ4003		FC.	CENTRIF.	FAN C.V									
9	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EQ2001		GA:	T SAIG	JBE HOT V	ATER								
1	GAS	1360			257	0	0	0	0	0	378	613		6,109
	PK	3.4				0.0	0.0	0.0	0.0	0.0	1.2	1.7	2.8	3.4
			HE											

														V 600	
Tran By:	e Air Condi Trane Custo	tioning Ec mer Direct	onomics Service	Network										PAGE 56	
EQUI	EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 1350 BASERUN FT LEONARD WOOD														
BLDG	1350 BAS	ERUN FT	LEONARD	WOOD											
		•••	1003	1110	671	0	0	0	0	0	786	1074	1110	6,865	
	Brec Brec	1110 1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	
					D DD3ET	FAN									
1	EQ5240			ER FORCE			0	0	0	0	347	474	490	3,027	
	ELEC	490	442	490	296	0			0.0	0.0	0.7	0.7	0.7	0.7	
	PK	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •				
1	EQ5307		BOI	LER CONTR	OLS					_	263	360	372	2,301	
	ELEC	372	336	372	225	0	. 0	0	0	0			0.5	0.5	
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	Ų.5	0.5	

BLDG 1720 - E.M. BARRACKS NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	110110511 0	OURS WHEN	MAXIMUM BTU	
MONTH	HEATING	INCLUDING ECONOMIZER	HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	696 560 516 262 79 4 0 5 112 298 505 698 3735	9 34 110 270 482 636 703 696 515 244 79 7	0 0 0 0 0 0 0 0	0 0 0 0	5598E+06 4808E+06 4780E+06 2802E+06 1698E+05 .0000 3783E+05 1492E+06 2520E+06 3812E+06 6209E+06	.3688E+06 .2352E+06 .9568E+05
Y LAK	3133					

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720-2.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	234.59	.00	4.93	23.68	.75	33.68	17.1
FEB	175.39	.01	4.45	21.38	.68	30.42	17.1
MAR	140.25	.45	4.93	23.68	.75	33.68	26.5
APR	56.76	2.07	4.77	22.91	.73	32.60	28.5
MAY	13.74	4.23	4.93	23.68	.75	33.68	32.4
JUN	.59	8.46	4.77	22.91	.73	32.60	38.4
JUL	.00	10.60	4.93	23.68	.75	33.68	40.8
AUG	.74	9.79	4.93	23.68	.75	33.68	35.7
SEP	19.11	6.23	4.77	22.91	.73	32.60	34.8
OCT	59.38	1.87	4.93	23.68	.75	33.68	28.8
NOV	125.78	.50	4.77	22.91	.73	32.60	25.3
DEC	232.07	.03	4.93	23.68	.75	33.68	17.1
YEAR	1058.40	44.24	58.02	278.77	8.83	396.61	40.8

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 75027. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720-2.I

BLDG 1720 - E.M. BARRACKS NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. DEG +	DRIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	5598E+06
FEB	1464.	929.	1.000	37.	0.	0.	0	0	.1025E+06	4808E+06
MAR	1922.	1254.	1.000	43.	0.	0.	0	0	.2656E+06	4780E+06
APR	2312.	1600.	1.000	55.	0.	0.	0	0	.3054E+06	2802E+06
MAY	2566.	1826.	1.000	65.	0.	0.	0	0	.3786E+06	1698E+06
JUN	2647.	1993.	1.000	72.	0.	0.	0	0	.4953E+06	2159E+05
JUL	2546.	2015.	1.000	77.	0.	0.	0	0	.5628E+06	.0000
AUG	2280.	1840.	1.000	76.	0.	0.	0	0	.5253E+06	3783E+05
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.5268E+06	1492E+06
			1.000	57.	0.	٥.	0	0	.3688E+06	2520E+06
OCT				47.	0.	0.	0	0	.2352E+06	3812E+06
NOV			1.000			0.	0	1		6209E+06
DEC	883.	604.	1.000	35.	0.	0.	U	-		

```
BLDG 1720 - E.M. BARRACKS DDC (FT LEONARD WOOD, MO)
```

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
                                                                        1
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 1.000000
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                          YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000

ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01

2.000000E-01
 SOLAR REFLECTANCE OF GROUND (REGG) 2.000000

INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000

THE TEMPERATURE OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 190625.000000
 FLOOR AREA (SQFT) 22876.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 620930.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -725350.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 228760.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 1348.000000
 INFILTRATION PROFILE
                                                                                                  1.00 1.00
                                                                                  .800
                                                                  .800
                                                 .800
                                 .800
            .800
                                                                 1.00 1.00
                                                                                                  1.00
                                                                                                                  1.00
  1.00 1.00 1.00
                                                 1.00
                                                                  1.00 .800 .800 .800
                                                 1.00
                                 1.00
                 1.00
   1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 4.240000E-01
 B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
 C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-0
BUILDING THERMAL MASS MCP BTU/F (CMCP) 23702.360000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00 SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 294.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 98.000000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
 WINDOW SHADING FACTOR (SHD) 5.900000E-01
 WALL NUMBER
AZIMUTH ANGLE (AZ)
WALL AREA SQFT (AWLL)
WINDOW AREA SQFT (AWND)
WINDOW HEIGHT FT (WNDH)
WINDOW WIDTH FT (WNDW)
WIDTH OF OVERHANG (WOH)
OVERHANG HGT ABV WNDW(HOH)

WALL DATA
1 2 3 4

4 00 00 00 180.00 -90.00

4236.0 4038.0
4038.0
1179.0
1148.0 .0 1179.0
10.0 10.0
117.9
00 0 0 0 0 0 0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .110	120.0 .137	120.0 .110	120.0 .138	
WALL TRANSFER FUNCTIONS ON FACTORS	.00405	.00505	.00405		
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00001	.00001	.00001	.00001	
N=2	.00056	.00070	.00223	.00280	
N=3 N=4	.00116	.00144	.00116	.00145	
N=5 N=6	*****	******	*****	*****	
NUMBER OF DN FACTORS (ND)	5	5	5	5	
DN FACTORS N=1	1.00000	1.00000	1.00000	1.00000 -1.71940	
N=2 N=3	-1.71940 .84375	.84375	.84375	.84375	
N=4	09022	09022 -00268	09022 .00268	.00268	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6 POOF AREA SOFT (AROF) 7721	*****	*****	*****	****	
ROOF AREA SQFT (AROF) 7721	.000000 F) 7.10	0000E-02			
ROOF AREA SQFT (AROF) ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (CNR)	ES, 0=NO)	(IROOF)	1		
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR			771		
.193E-02 .199E-01 .120E-01 ROOF D TRANSFER FUNCTIONS (DNR					
1.00600 .822E-01	0.00000	טטוענ			
			0000		
SKYLIGHT AZIMUTH ANGLE DEGLESS SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	,			
SKYLIGHT OVERHANG WIDTH FT (SK OVERHANG HEIGHT ABOVE SKYLIGHT			000E+00		
SKYLIGHT GLASS NUMBER (NS)	1		30		
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT-H REACTION OF PROCESS HEAT TO IN	SHSK) SHSK (MS	r, NDST)	1	1	1
SUMMER END MONTH AND DAY FOR S	SHSK (MND,)	NDND) +00	1	_	
DAYTIME SKY LIGHT U BTU/SQFT-H	IR-F (SKYU -HR-F (SK) 1 YUN)	.292998 1.292998		
FRACTION OF PROCESS HEAT TO IN	TERNAL SP	ACE (FAP)	1.80000	0E-01	

------INTERNAL GAINS AND PROFILES -----THERMOSTAT SET POINT DEG F

	KM -		- BTU/HR - PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	SENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	16.	13093.	21600.	10080.		
HOUR	HO	URLY FRACT	CION OF PE			70.0
1	.200	.300	1.000	1.000	68.0	78.0
<u> </u>	.200	.300	1.000	1.000	68.0	78.0
2		.300	1.000	1.000	68.0	78.0
3	.200		1.000	1,000	68.0	78.0
4	.200	.300			68.0	78.0
5	.400	.300	1.000	1.000	=	78.0
6	.800	.500	1.000	1.000	68.0	
7	1.000	.500	.600	.600	68.0	78.0
		.300	.400	.400	68.0	78.0
8	.200		.100	.100	68.0	78.0
9	.200	.300		·	68.0	78.0
10	.200	.300	.100	.100		78.0
11	.200	.300	.100	.100	68.0	
12	.200	.300	.100	.100	68.0	78.0

```
78.0
                                                              68.0
                                                 .100
                          .300
                                     .100
              .200
  13
                                                                           78.0
                                                 .100
                                                              68.0
                          .300
                                     .100
              .200
  14
                                                                           78.0
                                                              68.0
                                                 .100
                                     .100
              .200
                          .300
  15
                                                                           78.0
                                                              68.0
                                     .300
                                                 .300
               .200
                          .500
                                                                           78.0
                                                 .500
                                                              68.0
                                     .500
                          .600
              .400
  17
                                                                           78.0
                                                 .800
                                                              68.0
                          .700
                                     .800
  18
               .800
                                                                           78.0
                                                              68.0
                                                 .900
                          .900
                                     .900
             1.000
  19
                                                                           78.0
                                                              68.0
                                     .900
                                                .900
                          .900
             1.000
  20
                                                .900
                                                                           78.0
                                                              68.0
                                     .900
                          .900
             1.000
  21
                                                                           78.0
                                                              68.0
                                                1.000
                          .500
                                    1.000
              .500
  22
                                                                           78.0
                                                               68.0
                                                1.000
                          .300
                                    1.000
              .200
                                                                           78.0
  23
                                                               68.0
                                               1.000
                                    1.000
               .200
                          .300
NO HEATING ABOVE AMBIENT TEMP. OF (THLKOT) 68.000000
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 65.000000
SYSTEM TYPE, (IECN)
SUPPLY AIR CFM (SACFM)
                           37800.000000
ECONOMIZER HIGH TEMP LIMIT F
                                      65.000000
                                        0.00000E+00
SYSTEM SUPPLY AIR START TIME HR
SYSTEM SUPPLY AIR STOP TIME HR
                                       24.000000
                                       55.000000
SYSTEM MIXED AIR TEMP(TMXAIR)
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR)
                                               0.00000E+00
FAN EFFICIENCY (EFAN) 5.500000E-01
                                            1.250000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
HEATING PLANT RATED OUTPUT BTU (HFLOT) 620930.000000
HEATING PLANT RATED INPUT BTU (HFLIN) 776162.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                                                  .451
                                                                      .400
                                                           .369
                                    .286
                                          .300
                        .200
            .191
 .100
                                                                                  .812
                                                                      .800
                                                          .718
                                              .700
                                    .625
                        .600
             .537
 .500
             .906
                                    1.00
                        1.00
  .900
CHILLER TYPE (ITYPCH) 0
COOLING PLANT RATED OUTPUT BTU (CFLOT)
                                              725350.000000
COOLING PLANT RATED INPUT BTU (CFLIN)
                                              134096.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                                  .370
                                                                      .400
                                                          .310
                                              .300
                        .200
                                   .250
             .200
  .100
                                                                      .800
                                                                                  .760
                                                          .650
                                              .700
                         .600
                                    .550
             .450
  .500
                                    1.00
                        1.00
             .880
  .900
```

BLDG 1720 - E.M. BARRACKS DDC (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITN DOOR				VENT	
					AND			TITND OF	AND	LATENT
MNTH	LOAD		WINDOW	ROOF	SLAB	BSMT	WALL	MTMDOM	0.	0.
JAN	0.	GAIN	33.	0.	0.	0.	27	_31	-129.	0.
	-155.	LOSS		-TO.	-10.	٠.	• • • • • • • • • • • • • • • • • • • •	-31.	123.	
				_	0	^	٥	٥.	0.	0.
FEB	ο.	GAIN	44.			0.	-27.	-26.	-111.	0.
	-112.	LOSS		-13.	0. -8.	0.	2,.			
	_		E 4	0	0. -8.	0.	2.	0.	0.	1.
MAR	6.	GAIN	54.	_12	-8.	0.	-19.	-25.	-103.	0.
	-83.	TOSS		12.	٥.					
	31.23	CAIN	57.65	.41	.02	.00	6.92	.07	.24	3.51
APR	-27.67	TOSS	37.03	-7.59	-4.95	.00	-8.41	-15.55	-61.15	.00
MAV	71.62	GAIN	63.66	1.04	.08	.00	13.19	.25	.72	12.86
LIMI	-4.58	LOSS		-5.30	-3.21	.00	-2.69	-9.71	-37.50	.00
						_		•	2	52
JUN	146.	GAIN	63.	2.	o.	0.	20.	E	_17	0.
	0.	LOSS		-3.	0. -2.	0.	-1.	-5.	-17.	٠.
				_		^	26	3	9.	67.
JUL		GAIN	65.	3.	1.	٥.	20.	-3.	-11.	0.
	0.	LOSS								
	_			2	1. -1.	0	22.	2.	6.	67.
AUG	172.	GAIN	58.		_1	0.	0.	-4.	-12.	0.
	0.	LOSS		-3.		•	•			
	100	CATN	40	1.	0. -3.	0.	12.	1.	4.	40.
SEP	102.	TOSS	40.	-5.	-3.	0.	-3.	-8.	-28.	0.
	-/.	TOSS								
OCT	24 18	CATN	40.12	.20	.03	.00	3.23	.11	.35	6.29
001	-27.24	LOSS		-7.95	-4.63	.00	-10.37	-14.15	-49.99	.00
									00	1 00
NOV	5.49	GAIN	31.42	.00	.00	.00	.66	.00	.00	1.09
1.01	-69.41	LOSS		-10.53	.00 -6.36	.00	-20.37	-19.47	-72.96	.00
	03012					_	_	•	0	0
DEC	0.	GAIN	29.	0.	0.	0.	0.	٠.	-122	0.
	-152.	LOSS		-15.	0. -10.	0.	-38.	-30.	-122.	0.
					•	^	106	7	23	252.
TOT	747.	GAIN	587.	10.	2. -62.	0.	-167	-191 -191	-754.	0.
	-637.	LOSS		-101.	-62.	0.	-10/.	171.	, 5 2 •	
			٠,	15700	מחווש הא	DEC 18	HOUR	8 AM	BIENT TH	EMP 1.
MAX	HEATING	LOAD:	= -b. _ =	137EU	BTUH ON	JUL 3	HOUR 1	2 AM	BIENT T	EMP 86.
XAM	COOLING	LUAD:	= 5°	*JZJU•	DION ON					

ZONE UA BTU/HR-F 4135.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720-1.I BLDG 1720 - E.M. BARRACKS DDC (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTER	RNAL S	JRE F	DAY :		OIN- IDENT	LIGHTING THOUSAND	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAI	nk s	mpi.			0.56	33.68
JAN	68.	79.	67.	5 29	15 4	64. 11.	4.93	23.68	2.56	33.00
FEB	69.	79.	67.	17 2	13 3	59. 15.	4.45	21.38	2.31	30.42
MAR	70.	79.	67.	12 3	12 4	74. 17.	4.93	23.68	2.56	33.68
APR	73.	79.	68.	30	12 4	80. 31.	4.77	22.91	2.48	32.60
MAY	76.	79.		28	12	85. 38.	4.93	23.68	2.56	33.68
JUN	78.	80.	68.	11 27	13	88.	4.77	22.91	2.48	32.60
JUL	78.	80.	68.	17 3	5 12 5	56. 86. 57.	4.93	23.68	2.56	33.68
AUG	78.	80.	70. 68.	10 12 25	12 5	86. 52.	4.93	23.68	2.56	33.68
SEP	76.	80.		3	12 4	89.	4.77	22.91	2.48	32.60
OCT	73.	79.		5	13 4	80.	4.93	23.68	2.56	33.68
NOV	70.	79.		7	14 4	73.	4.77	22.91	2.48	32.60
DEC	68.	79.		23	14 8	70.	4.93	23.68	2.56	33.68
YEAR			67.	18	8	1.	58.02	278.77	30.15	396.61

BLDG 1720 - E.M. BARRACKS DDC (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	NUMBER OF HO	OURS WHE	MAXIMUM BTU	
MONTH	HEATING	INCLUDING ECONOMIZER	HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR	691 549 501 246 65 1 0 4 101 285 485 693 3621	5 23 90 239 433 589 674 672 471 206 60 4	000000000000000000000000000000000000000	0000000000000	5474E+064689E+064658E+062701E+061635E+06 -862200003304E+051424E+062428E+063710E+066158E+06	.3517E+06 .2204E+06 .7552E+05
IDMK	3021					

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1720-1.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	226.68	.00	4.93	23.68	.75	33.68	17.1
FEB	168.32	.01	4.45	21.38	.68	30.42	17.1
MAR	133.58	.42	4.93	23.68	.75	33.68	26.1
APR	52.74	1.96	4.77	22.91	.73	32.60	28.0
MAY	11.40	4.04	4.93	23.68	.75	33.68	31.5
JUN	.15	7.90	4.77	22.91	.73	32.60	37.4
JUL	.00	10.04	4.93	23.68	.75	33.68	39.6
AUG	.59	9.27	4.93	23.68	.75	33.68	34.7
SEP	17.04	5.72	4.77	22.91	.73	32.60	34.0
OCT	55.62	1.69	4.93	23.68	.75	33.68	28.3
NOV	119.06	.46	4.77	22.91	.73	32.60	24.9
DEC	224.19	.02	4.93	23.68	.75	33.68	17.1
YEAR	1009.36	41.53	58.02	278.77	8.83	396.61	39.6

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 72480. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 1720 - E.M. BARRACKS DDC (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	WHEN LOADS MET HEAT	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1041.	675.	1.000	35.	0.	0.	0	0	.0000	5474E+06
FEB	1464.	929.	1.000	37.	0.	٥.	0	0	.9049E+05	4689E+06
MAR	1922.	1254.	1.000	43.	0.	ο.	0	0	.2499E+06	4658E+06
APR	2312.	1600.	1.000	55.	0.	٥.	0	0	.2896E+06	2701E+06
MAY	2566.	1826.	1.000	65.	0.	0.	0	0	.3612E+06	1635E+06
JUN	2647.	1993.	1.000	72.	0.	ο.	0	0	.4771E+06	-8622.
JUL	2546.	2015.	1.000	77.	0.	ο.	0	0	.5433E+06	.0000
AUG	2280.	1840.	1.000	76.	0.	0.	0	0	.5065E+06	3304E+05
SEP	1856.	1371.	1.000	68.	0.	0.	0	0	.5057E+06	1424E+06
OCT	1437.	953.	1.000	57.	0.	0.	0	0	.3517E+06	2428E+06
NOV		732.	1.000	47.	0.	ο.	0	0	.2204E+06	3710E+06
DEC			1.000	35.	0.	٥.	0	0	.7552E+05	6158E+06

COMPUTER SIMULATIONS

BUILDING 1721

EMCENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN

DATE: BUILDING NO.: 04-Mar-93 1721

BLDG. TYPE:

DAYROOM

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	148.9	110.1	102.9	102.9	139.1	145.5
COOLING (kWH)	5610	4900	4590	4560	5580	5420

SUPPLY AIR FAN	3490 CFM
FLOOR AREA	1920 FT ²
CFMI	110 CFM
UA	703 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	600	2100	75 HR	HR. ON HEATING	2730 HR/YR
SAT.	600	2100	15 HR	HR. ON COOLING	1830 HR/YR
SUN.	600	2100	15 HR	HR. OFF HEATING	1638 HR/YR
	TOTAL OCCUP	YHR.	105 HR/WK	HR. OFF COOLING	1098 HR/YR
	TOTAL UNOCC		63 HR/WK		
	ANNUAL OCCU	PY HR.	5475 HR/YR	7	
	ANNUAL UNOC		3285 HR/YR	7	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

8760 HR/YR 4368 HR/YR 2928 HR/YR

HOUR SAVE (HEATING ONLY) HOUR SAVE (COOLING ONLY)

4368 2928 2730 1830 1638 HR/YR 1098 HR/YR

HOAUHC	148.9 MBtu -	139.1 MBtu	=	2.71E+01 Btu/CFM-HR	
	110 CFM *	3285 HR/YR			
HOAUH	148.9 MBtu	139.1 MBtu	=	5.44E+01 Btu/CFM-HR	
	110 CFM *	1638 HR/YR			
COAUHC	5610 kWH -	5580 kWH	=	8.30E-05 kWH/CFM-HR	
Γ	110 CFM *	3285 HR/YR			
COAUC	5610 kWH -	5580 kWH	=	2.48E-04 kWH/CFM-HR	
	110 CFM *	1098 HR/YR			
HOAOHC	148.9 MBtu -	145.5 MBtu	=	5.65E+00 Btu/CFM-HR	
	110 CFM *	5475 HR/YR			
HOAOH	148.9 MBtu	145.5 MBtu	=	1.13E+01 Btu/CFM-HR	
	110 CFM *	2730 HR/YR			
COAOHC	5610 kWH	5420 kWH	=	3.15E-04 kWH/CFM-HR	
	110 CFM *	5475 HR/YR]		
COAOC	5610 kWH	5420 kWH	=	9.44E-04 kWH/CFM-HR	
	110 CFM *	1830 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
	1/6 (10 MINUTES PER		=	0.17	

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 04--Mar--93

DATE: BUILDING NO.: BLDG. TYPE:

1721 DAYROOM

ENERGY CONSTANT CALCULATIONS

ECC	4590 kWH -	4560 kWH	=	4.70E-06 kWH/CFM-HR
	3490 CFM *	1830 HR/YR		
ECHC	4590 kWH -	4560 kWH	_ =	1.57E-06 kWH/CFM-HR
	3490 CFM *	5475 HR/YR		
NSUCHO	5610 kWH -	4900 kWH	=	6.19E-05 kWH/CFM-HR
	3490 CFM *	3285 HR/YR		
NSUCC	5610 kWH -	4900 kWH	_ =	1.85E-04 kWH/CFM-HR
	3490 CFM *	1098 HR/YR		
DDCCHC	4900 kWH -	4590 kWH	_ =	1.62E-05 kWH/CFM-HR
	3490 CFM *	5475 HR/YR		
DDCCC	4900 kWH -	4590 kWH	=	4.85E-05 kWH/CFM-HR
	3490 CFM *	1830 HR/YR		
NSC	148.9 MBtu -	110.09 MBtu	<u> </u>	5.52E+04 Btu/UA
	703	UA		
DSC	110.09 MBtu -	102.9 MBtu	_ =	1.02E+04 Btu/UA
	703	UA		
OPT	(2 HR/DAY X 272 DAY	/YR) – 294	HR/YR	
	·		=	250 HR/YR
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)	
				13.9 kWH/TON
OAR	506 HR/YR *	0.01	=	5.06 HR/YR

04-Feb-93 DATE: EMC ENGINEERS, INC. BHS BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: CLIENT PROJ. ENG.: DOUG CAGE 1721 BHL FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: DAYROOM **BLDG NO:** MAIL/ LOUNGE/ RECREATION **BLDG FUNCTION:** # FLOORS 1 1,920 FLOOR AREA: (SQ. FT) 190 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL EAST WEST SOUTH NORTH 2,114 556 611 394 553 WALLS, GROSS (SQ. FT) 192 72 60 0 60 (SQ. FT) **GLASS** 42 0 0 21 21 (SQ. FT) PERSONNEL DOOR 0 0 0 0 (SQ. FT) 0 OVERHEAD DOOR 1,880 539 556 313 472 (SQ. FT) WALLS, NET 1,920 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 42 (SQ. FT) 0 PERSONNEL DOOR (SQ. FT) **OVERHEAD DOOR** 0 0 0 0 (SQ. FT) BASEMENT WALLS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 4" FACE BPICK 0.91 AIR SPACE 3. 1.5' INSULATION 4.98 AIRSPACE 4. 1.89 1/2" RIGID INSULATION 6" CMU 5. 6. 6"CMU 0.68 INSIDE AIR FILM 9.06 TOTAL R-WALL = U=1/R 0.110 **R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM 0.34 BUILT-UP POOF **BUILT UP ROOF** 2. 6.67 2" RIGID INSULATION 2" RIGID INSULATION 3. 11.00 3" BATT INSULATION 4. 3" BATT INSULATION 1.00 CEILING AIR SPACE CEILING AIR SPACE 5. ACOUSTIC TILE 1.79 6. ACOUSTIC TILE INSIDE AIR FILM 0.68 21.64 TOTAL R-ROOF = 0.046 U=1/R 1.61 R-GLASS PPG 'PENNVERNON' C.L. TWNDV, SSA, .88 S.C. **GLASS TYPE:** 0.83 SLF CEMENT SLAB TYPE FLOOR: R-BASEM. 0.00 NONE BASEMENT TYPE: R-ODOOR 0.00 OVERHEAD DOOR TYPE: NONE R-PDOOR 2.56 PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 89 0.042 = X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 0 X CFM / SQ.FT. 0.000 = AVG. WALL H/M/L (SQ.FT.) 0 0.000 = X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 1.600 X CFM /OPENING /HR = DOOR OPENINGS / HR - SINGLE DOOR 21 X CFM /OPENING /HR 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 110 TOTAL INFILTRATION (CFM) 0 0.000 X DOOR 'U' 0 =ODOOR AREA **UA ODOOR** 16 0.391 X DOOR 'U' = PDOOR AREA 42 **UA PDOOR** 207 0.110 X WALL 'U' = WALL AREA 1,880 **UA WALL** 89 X ROOF 'U' 0.046 1,920 = ROOF AREA **UA ROOF** 119 X GLASS "U" 0.621 192 = GLASS AREA **UA GLASS** 158 X SLF 0.830 190 = SLAB PERIM. **UA SLAB** 0 X BASE. "U" 0.000 0 =B-WALL AREA UA BASEM. 113 X A. T. F. 1.035 110 INFILTRATION CFM 703 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204 - 000 04 - Feb - 93 EMC NO.: DATE: PREPAF ZONE:

	BHS	Œ	172121	1721
באור.	PREPARED BY:	CHECKED BY:	FIE:	BLDG:

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			
Ž	Fixtures Type	Tybe	Description	Watts/Fixture	lotal Wattage
		8	8 Fluorescent 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	-
	7	18	18 Incandescent - 60w	9	
	4	rc.	5 Fluorescent 1 - 34w lamp, 16w ballast (1x4 ft. fixture)	20	
	8	9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	252
TOTAL	24			TOTAL	2,552

			Peak Value for Internal Gains				
-	77 -14	1			Heat Gain		Total
euo7	Zone No. of Equip.	Total D.	Description	Average Wattage	ت	Total Wattage	(BTU)
ż	Equipmen	SA V	John Molor Hibe	300		006	3,072
	9	8	oz rejevision (color, mos)	009	65%	009	2,048
		Q (46 Microwave Overi	71	10%	71	242
_	_	49	49 Hadio	LCL	7002	1 535	5 239
	-	25	25 Cold Food/Beverage	05G,1	200		3
							1
				TOTAL	42%	3,106	10.601

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

1721

FILE: BLDG: ZONE:

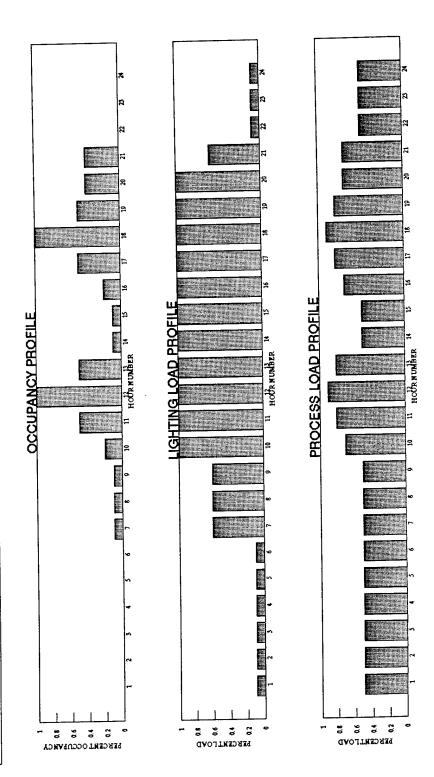
1721Z1 BHS CEL

04-Feb-93 3204-000

> DATE: PREPARED BY: CHECKED BY:

EMC NO:

	2	7		_		*	-	u	CO	
	ç	3			1		 	2 0	2	
	ç	77	-	_	1	,		1	0.0	
		7		40	;	,	9	1	5	
	3	3	1	40		,	=	,		
	9	5	ŀ	ر در	?	,	_	1	8.0	
	1	18		-	_	ŀ	-	1	60	
	ļ	1		ני	5	-	_		0.8	
		9		CCC	9			1	0.7	
	-	5			-		_	1	0.55	
_		4			-		_		O N	
ABEF	-	6		L	ე ე		-	-	80	
Š		2		- -	_		-	-	60	
HOUR NUMBER		=	-	1	9		-	-	0.8	
I		ç	1	100	200		-	-	0.7	
		σ	2		-	:	90	5	0.5	
		α	,	1	_		9	o o	0.5	2
		7	-		_		30	0.0	5.0	2
		ď	>	-	_		,	_ - -	S.	2
		ď	,		_		;		0.5	2
		=	+	╟	_		;	5	7,	2
		r	,			_	,	_	2	3
		6	J				,	_	2 0	4
		-	_		_	_			n C	3
14BC OF	ביים	֓֞֜֜֜֜֜֜֜֜֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓			VOIANGI ICOC			DI L	001000	THOUSE SO
C C	פרמפ	i		1		L COL VEC	T		1_	
2	2	į	1		1	•	•			



```
BLDG 1721 - DAYROOM BASERUN (FT LEONARD WOOD, MO)
```

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                                                                   1
NUMBER OF ZONES (NZ)
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER SOURCE ISW=0 (ISW)
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA
 *****REAL WEATHER FROM DISK*****
  FILE NAME MO
                                           YEAR 1955
 STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
SITE LATITUDE DEG (AL1) 37.750000
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (AMGRN) 20.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN)
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01
 INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000

70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
 VOLUME OF ZONE IN CUBIC FEET (VOLHS) 17278.000000
 FLOOR AREA (SQFT) 1920.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 77680.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -96225.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 19200.000000
                                                                                                                                  77680.000000
 CONSTANT INFILTRATION RATE CFM (CFMI) 110.000000
  INFILTRATION PROFILE
                                                                                                                                                                       .800
                                                                                                                                            .800
                                                                                                                                                                                                    .800
                                                                                                                .800
                                                        .800 .800
                     .800
                                                                                                                                          1.00
                                                                                                                                                                      1.00
                                                                                                                                                                                                    1.00
                                                                                                               1.00
    .800 1.00 1.00 1.00
                                                                                                                                            .800 .800
                                                                                                                                                                                                   .800
                                                                                                                1.00
                                                                                    1.00
                                                        1.00
    1.00 1.00
 A FACTOR IN INFILTRATION EQUATION (CINA) 3.820000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
 C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
BUILDING THERMAL MASS MCP BTU/F (CMCP) 4800.000000
 BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 157.000000
 PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 16.380000
WINDOW GLASS NUMBER (NG) 30
 DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
  WINDOW SHADING FACTOR (SHD) 5.900000E-01
 WALL DATA

WALL NUMBER

AZIMUTH ANGLE (AZ)

WALL AREA SQFT (AWLL)

WINDOW AREA SQFT (AWND)

WINDOW HEIGHT FT (WNDH)

WINDOW WIDTH FT (WNDW)

WINDOW WIDTH FT (WNDW)

WIDTH OF OVERHANG (WOH)

OVERHANG HGT ABV WNDW(HOH)

WALL DATA

1 2 3 4

4 1 2 3 4

4 2 2 6 0

135.00 -135.00

156.0

10.0 10.0 10.0 10.0

10.0 10.0 10.0

10.0 10.0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.0 0

10.
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0	120.0	120.0	120.0
U VALUE BTU/(HR-SQFT-F) (UW)	.110	.110	.110	.110
WALL TRANSFER FUNCTIONS CN FACTORS	.00471	.00471	.00471	.00471
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)			00000	00000
N=1	.00000	.00000	.00000	00050
N=2	.00050	.00050	.00050	00030
N=3	.00243	.00243	.00243	00162
N=4	.00162	.00162	000102	.00017
N=5	.00017	.00017	******	*****
N=6	*****	****	6	6
NUMBER OF DN FACTORS (ND)	6	0	O	Ū
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1 00000	1 00000	1 00000	1,00000
N=1	1.00000	_1 73771	-1.73771	-1.73771
N=2	-1./3//1	-1./3//1	.90936	.90936
N=3	12272	- 13373	13373	13373
N=4	13373	00496	.00496	.00496
N=5	- 00001	00001	00001	00001
N=6 ROOF AREA SQFT (AROF) 1920	000001	.00001		
ROOF AREA SQFT (AROF) 1920 ROOF U VALUE BTU/HR-SQFT-F (UR	F) 4.60	0000E-02		
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	rs O=NO)	(TROOF)	1	
ROOF TRANS FUNCTIONS USED (1-1	8.7568	841E-03		
THE REPORT OF THE PROPERTY OF PARTY OF THE PROPERTY OF THE PRO	1			
.886E-05 .130E-02 .487E-02	240E-02	.177E-03	885.	
THE PARTY TO THE PROPERTY OF T	1			
4 40 410	_ ////\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	.500E-03	999.	
ACTION ALL MANAGER AND AND ALL MANAGER AND AND AND AND AND AND AND AND AND AND	0.000000	ルニー・		
			0000	
SKILIGHT HEIGHT FT (SKH) 0.	00000E+00)		
SKYLIGHT AZIMOTH ANGLE DEGLESS SKYLIGHT HEIGHT FT (SKH) 0.0 SKYLIGHT WIDTH FT (SKW) 0.0	00000E+00			
CRALLCRU CALDRANC MIDIN H.I. 194	LUW I U + U	,0000000.00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)) 0.0000	00E+00	
SKYLIGHT SHADING COEFFICIENT (SHSK) (0.00000E+0)0 1	1
SUMMER START MONTH AND DAY FOR	R SHSK (MS)	r, NDST)	1	1
SUMMER END MONTH AND DAY FOR S	SHSK (MND,	NDND)	1	_
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	O.00000E	+00	202000	
DAYTIME SKY LIGHT U BTU/SQFT-H	R-F (SKYU)) 1.	1 20200	
NIGHT TIME SKYLIGHT U BTU/SQFT	-HR-F (SK	YUN)	1.222330	<u>ጉ</u>
NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	TERNAL SPA	ACE (FAP)	4.20000	U U L

		INTERN	AL GAINS	AND PROFILES	THERMOS	TAT SET EG F
PEAK VAL	KW - LIGHTS 3.	4452.	BTU/HR - PEOPLE SENSIBLE 5400.	PEOPLE LATENT 4400.	HEATING	COOLING
HOUR 1 2 3 4 5 6 7 8 9 10 11	HO .100 .100 .100 .100 .100 .600 .600 .600	URLY FRACT .500 .500 .500 .500 .500 .500 .500 .50	CION OF PE .000 .000 .000 .000 .000 .100 .100 .10	.000 .000 .000 .000 .000 .000 .100 .100	70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0	76.0 76.0 76.0 76.0 76.0 76.0 76.0 76.0

NO COOLI SYSTEM T SUPPLY A ECONOMIZ SYSTEM S	1.000 1.000 .600 .100 .100 .100 NG ABOVE AME NG BELOW AME YPE, (IECN) IR CFM (SACE ER HIGH TEME	FM) 3490 P LIMIT F TART TIME D	.100 .100 .200 .500 1.000 .500 .400 .400 .000 .000 .000 .000	.100 .100 .200 .500 1.000 .500 .400 .400 .000 .000 T) 68	3.000000	76. 76. 76. 76. 76.	0 0 0 0 0 0 0
SYSTEM M MIN OUTS	IIXED AIR TEN SIDE AIR FRAC	TION OF S	ACFM (OAFR)	1.000	000E-01		
FAN TOTA HEATING	CIENCY (EFAI L PRESSURE I PLANT RATED PLANT RATED PLANT PART I	IN. WATER OUTPUT BT	(DP) U (HFLOT)	78000.00 97500.00	0 0000 0000		
IIERTINO	PLANT PART I		AC OF INPUT		LH) .369	.400	.451
	.537		.625	.700	.718	.800	.812
.900 CHILLER	.906 TYPE (ITYPC)	H)	1.00 0	96225.0	00000		
GOOT THE	PLANT RATED PLANT RATED PLANT PART	INPUT BTU LOAD FRAC	(CFLIN) VS FRAC RAT	17789.00 TED COP (P	0000 LC)	.400	.370
.100	.200	.200	.250 .550	.300	.310		
.900		1.00	1.00	.,	-		
.900	.000						

BLDG 1721 - DAYROOM BASERUN (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH	LOAD	GAIN	2.72	ROOF	PARTITN DOOR AND SLAB .00	BSMT	.00	.00	.00	LATENT
	-23.76	LOSS		-2.58	-4.58		•••		-22.10	
FEB		GAIN LOSS	3.39	.00 -2.15	.00 -3.92	.00	.00 -3.35	.00 -2.29	.00 -18.93	.00
MAR	1.06 -14.47		4.40	.01 -1.94	.00 -3.65	.00	.11 -2.63	.00 -2.13	.00 -17.58	.13 .00
APR	5.08 -5.68		4.62	.08 -1.16	.02 -2.18	.00	-1.22	-1.27	-10.23	•00
MAY	11.25 -1.31		5.07	.20 71	.07 -1.26	.00	1.04 40	.04 71	.26 -5.93	2.41
JUN	22.91 08		5.09	.35 41	.20 61	.00	1.67 08	.12 34	.79 -2.38	8.85 .00
JUL	29.97 01	GAIN LOSS	5.28	.53 29			2.29 04	.31 21	2.08 -1.50	.00
AUG	27.93 06	GAIN LOSS	4.67	.43 32	.39 42	.00	1.89 05	23	1.51 -1.61	.00
SEP	16.27 -1.58	GAIN LOSS	3.76	.19 64	.20 -1.02	.00		59	.82 -4.71	.00
	4.57 -5.23		3.17	.03 -1.25	.03 -2.10	.00	-1.44	-1.20	.11 -9.28	.00
	-11.45	LOSS		-1.75	.00 -3.00	.00	-2.61	-1.71		.00
					.00 -4.49					
TOT	120. -105.	GAIN LOSS	47.	2. -16.	1. -28.	0. 0.	9. -21.	1. -16.	6. -129.	43.
MAX XAM	HEATING COOLING	LOAD=	=7 = 8	77680. 38350.	BTUH ON BTUH ON	DEC 18 JUL 3	HOUR 12	AMI AMI	BIENT TE BIENT TE	MP 3.

ZONE UA BTU/HR-F 430.5

BEACON Energy Analysis By Energy Systems Engineers, Inc.

BLDG 1721 - DAYROOM BASERUN (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATU MAX	JRE F	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	77.	65.	4 27	12 6	63. 4.	1.13	4.86	3.03	9.88
FEB	71.	77.	69.	17 2	13 6	59. 14.	1.02	4.39	2.73	8.93
MAR	71.	78.	69.	12 4	13 6		1.13	4.86	3.03	9.88
APR	73.	78.	69.	30 9	12 5		1.09	4.71	2.93	9.57
MAY	75.	78.	69.	28 11	12 5		1.13	4.86	3.03	9.88
JUN	76.	78.	70.	22 17	12 5		1.09	4.71	2.93	9.57
JUL	77.	78.	70.	3 10			1.13	4.86	3.03	9.88
AUG	77.	78.	70.	19 25	12 6		1.13	4.86	3.03	9.88
SEP	75.	78.	69.	3 15			1.09	4.71	2.93	9.57
OCT	73.	78.	69.	5 28			1.13	4.86	3.03	9.88
NOV	71.	77.	69.	8			1.09	4.71	2.93	9.57
DEC	70.	77.		29			1.13	4.86	3.03	9.88
YEAR							13.32	57.27	35.63	116.38

BLDG 1721 - DAYROOM BASERUN (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	110110001	HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING CO		HEATING	COOLING
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	680 559 526 299 120 17 3 10 117 302 475 684	15 27 93 227 379 511 625 608 428 220 93	14 0 0 0 0 0 0 0 0 0		7768E+05 7218E+05 7196E+05 4481E+05 3044E+05 8002. 5296. 1238E+05 2914E+05 4204E+05 6188E+05 7768E+05	.0000 .1891E+05 .4324E+05 .4930E+05 .6068E+05 .8062E+05 .8151E+05 .8151E+05 .8619E+05 .4512E+05 .1755E+05
YEAR	3792	3241	20	U		

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	ION PROCESS MILLION BTU	TANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	33.01	.00	1.13	4.86	.89	9.88	3.7
FEB	25.92	.00	1.02	4.39	.80	8.93	5.0
MAR	21.41	.06	1.13	4.86	.89	9.88	5.9
APR	9.54	.28	1.09	4.71	.86	9.57	6.2
MAY	2.89	.59	1.13	4.86	.89	9.88	6.8
JUN	.32	1.18	1.09	4.71	.86	9.57	7.9
JUL	.06	1.55	1.13	4.86	.89	9.88	8.4
AUG	.20	1.44	1.13	4.86	.89	9.88	8.0
SEP	3.04	.85	1.09	4.71	.86	9.57	8.3
OCT	9.07	.26	1.13	4.86	.89	9.88	6.9
NOV	17.58	.08	1.09	4.71	.86	9.57	6.0
DEC	32.36	.00	1.13	4.86	.89	9.88	5.0
YEAR	155.39	6.31	13.32	57.27	10.44	116.38	8.4

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 164214. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721.I

BLDG 1721 - DAYROOM BASERUN (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY		AVG. MBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	ο.	0	0	.0000	7768E+05
FEB	1421.	901.	1.000	37.	0.	٥.	0	0	.1891E+05	7218E+05
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.4324E+05	7196E+05
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.4930E+05	4481E+05
MAY	2489.	1771.	1.000	65.	0.	ο.	0	0	.6068E+05	3044E+05
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.8062E+05	-8002.
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8835E+05	-5296.
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.8151E+05	1238E+05
SEP	1800.	1330.	1.000	68.	0.	٥.	0	0	.8619E+05	2914E+05
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.6359E+05	4204E+05
NOV	1008.	710.	1.000	47.	0.	ο.	0	0	.4512E+05	6188E+05
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.1755E+05	7768E+05

BLDG 1721 - DAYROOM NIGHT SETBACK (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)

3
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK*****
FILE NAME MO
                    YEAR 1955
STATION 13995
                                   37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SITE LATITUDE DEG (AL1)
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 17278.000000
FLOOR AREA (SQFT) 1920.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 77680.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -96225.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 19200.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 110.000000
INFILTRATION PROFILE
                                                                                .800
                                                                                              .800
                                                                  .800
                                                     .800
                                        .800
             .800
                          .800
  . 800
                                                                  1.00
                                                                                1.00
                                                                                             1.00
 .800 1.00 1.00
                                                     1.00
                                        1.00
                                                                  .800 .800
                                                                                            .800
                                                     1.00
                                        1.00
                          1.00
             1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
3.820000E-01
2.165000E-02
8.330000E-03
4800.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 157.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 16.380000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
```

MAX SOLAR WITH NO SHADE (SOLMX)	120.0	120.0	120.0	120.0	
U VALUE BTU/(HR-SQFT-F) (UW)	.110	.110	.110	.110	
WALL TRANSFER FUNCTIONS					
WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	.00471	.00471	.00471	.00471	
NUMBER OF BN FACTORS (NB	5	5	5	5	
BN FACTORS BN (BN)		00000	00000	00000	
N=1	.00000	.00000	.00000	00050	
N=2	.00050	.00050	00243	.00243	
N=3	.00243	00162	.00162	.00162	
N=4	00017	00102	.00017	.00017	
N=5	******	*****	*****	*****	
N=6	6	6	6	6	
NUMBER OF DN FACTORS (ND)	•	•			
	1.00000	1.00000	1.00000	1.00000	
N=1 N=2	-1.73771	-1.73771	-1.73771	-1.73771	
N=3	.90936	.90936	.90936	.90936	
N=4	13373	13373	13373	13373	
N=5	.00496	.00496	.00496	.00496	
N=6	00001	00001	00001	00001	
POOF APEA SOFT (AROF) 192	0.000000				
ROOF U VALUE BTU/HR-SQFT-F (U	RF) 4.60	0000E-02			
POOR TRANS FUNCTIONS USED (1=	YES, U=NO)	(IROOF)	1		
ROOF U VALUE BTU/HR-SQFT-F (U ROOF TRANS FUNCTIONS USED (1= ROOF C TRANSFER FUNCTION (CNR	8.7568	41E-03			
TOTAL TOTAL TOTAL TOTAL PROPERTY OF A PARTY OF THE PROPERTY OF	D \				
.886E-05 .130E-02 .487E-02	.240E-02	.177E-03	885.		
DOOD D DDANCEED FINCTIONS IDN	RI				
1 00 _1 19 410	444E-01	.500E-03	999.		
EVVITOUR RILT DEGREES (TILT)	0.000000)E+UU			
EVVITOUR AZIMITH ANGLE DEGREE	S (AZSA)	7777.000	1000		
EVVITAUT HETAHT FT (SKH) U	. DODOOUE+OU)			
CRAITCHT MIDTH ET (SKW) 0.	OOOOOOE+OO				
EVVITOUT OVERHANG WINTH FT (S	KOW) U.U	1000000m~00			
OVERHANG HEIGHT ABOVE SKYLIGH	T FT (SKOH)	0.0000	00E+00		
OVULTOUR CLASS NUMBER (NS)	1				
SKILIGHT GLASS NOMBER (NO) SKYLIGHT SHADING COEFFICIENT SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR	(SHSK)).000000E+C	1 1	1	ı
SUMMER START MONTH AND DAY FO	R SHSK (MS)	L'NDST I	1 *	1	
SUMMER END MONTH AND DAY FOR	SHSK (MND,	ן שאשא א	-	_	
SUMMER END MONTH AND DAY FOR SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT- NIGHT TIME SKYLIGHT U BTU/SQF FRACTION OF PROCESS HEAT TO I	יוטאס) ש-מנו	1.	292998		
DAYTIME SKY LIGHT U BTU/SQFT-	m-nn-r (SK)	/	1.292998		
NIGHT TIME SKYLIGHT U BTU/SQF	T-UK-E (SV)	CE (FAP)	4,20000	E-01	
WEEKEND COOLING THERMOSTAT PF	OFILE				
90.0 90.0 90.0	90 0	90.0	90.0	76.0	76.0
90.0 90.0 90.0	30.0	50.0			
76.0 76.0 76.0	76.0	76.0	76.0	76.0	76.0
76.0 76.0 76.0	.0.0				
76.0 76.0 76.0	76.0	76.0	90.0	90.0	90.0
78.0 70.0 70.0					
WEEKEND HEATING THERMOSTAT PR	ROFILE				
55.0 55.0 55.0	55.0	55.0	55.0	70.0	70.0
70.0 70.0 70.0	70.0	70.0	70.0	70.0	70.0
			_		
70.0 70.0 70.0	70.0	70.0	55.0	55.0	55.0

INTERNAL	GAINS AND	PROFILES	
			THERMOSTAT SET
			POINT DEG F
KW B	TU/HR		

PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
PEAK VAL 3. 4452. 5400.
4400.
                                                              90.0
90.0
90.0
          - - - - HOURLY FRACTION OF PEAK - - - -
                                                                90.0
                                                                90.0
                                                               90.0
                                                                76.0
                                                               76.0
                                                                 76.0
                                                                 76.0
                                                                 76.0
                                                                 76.0
                                                                 76.0
                                                                 76.0
                                                               76.0
                                                              76.0
76.0
76.0
76.0
90.0
90.0
 SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 3490.000000
 ECONOMIZER HIGH TEMP LIMIT F 65.000000
 SYSTEM SUPPLY AIR START TIME HR
                                  0.00000E+00
 SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 70.000000
 MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
 FAN EFFICIENCY (EFAN) 5.500000E-01
                                         1.600000
 FAN TOTAL PRESSURE IN. WATER (DP)
 HEATING PLANT RATED OUTPUT BTU (HFLOT) 78000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 97500.000000
 HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                           FRAC OF INPUT TABLE (PLH)
.286 .300 .369 .400 .451
                  .200
          .191
                     .600
                                                                    .812
                                       .700 .718 .800
                              .625
  .500
            .537
 .900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 0
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 96225.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 17789.000000
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
  .100 .200 .200 .250 .300 .310
                                                           .400
                                                                    .370
  .500 .450 .600 .550 .700 .650
                                                          .800
                                                                    .760
  .900 .880 1.00 1.00
```

BLDG 1721 - DAYROOM NIGHT SETBACK (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

JAN	LOAD .00 -18.18	GAIN LOSS	SOLAR THRU WINDOW 2.72	ROOF	חח	BSMT	. (11)	- 00	VENT AND INFL .00	.00
		GAIN LOSS	3.39	.00 -1.85	.00 -3.34	.00	.00 -2.66	.00 -1.95	.00 -16.01	.01
MAR		GAIN LOSS	4.40	-1.65	-3.09	.00	-1.99	-1.61	.00 -14.86	
APR		GAIN LOSS	4.62	.08 99	.02 -1.85	.00	.53 86	.01 -1.09	.08 -8.76	.62 .00
MAY	11.10 50		5.07	.21 66	.07 -1.16	.00	1.07 30	.04 65	.26 -5.52	2.32 .00
JUN	21.10 01		5.09		.20 67		1.60 09	.12 38	.79 -2.62	7.57 .00
JUL	25.37 .00	GAIN LOSS	5.28	.52 38	.51 56		2.07 05	.30 32	2.03 -2.23	8.33 .00
AUG	23.74 02		4.67	.42 40	.39 58	.00	1.72 06	.22 32	1.51 -2.21	8.43 .00
SEP	14.74 65		3.76	.19 61	.20 96	.00	.95 32	.12 55	.81 -4.44	5.30 .00
OCT	4.54 -2.73		3.17	.04 -1.08	.03 -1.76	.00	.24 -1.07	.02 -1.01	.11 -7.86	1.09 .00
NOV	1.21 -7.71		2.51	.00 -1.51	.00 -2.52	.00	.04 -2.05	.00 -1.44	.00 -11.35	.23
DEC	.07 -17.52	GAIN LOSS	2.46	.00 -2.23	.00 -3.83	.00	.00 -3.66	.00 -2.21	.00 -17.87	.00
TOT	108. -74.	GAIN LOSS	47.	2. -14.	1. -24.	0. 0.	8. -17.	1. -14.	6. -112.	34. O.
MAX MAX	HEATING COOLING	LOAD=	: -7 : 8	7680. I	BTUH ON BTUH ON	DEC 28 JUL 3	HOUR 7 HOUR 12	AME	BIENT TEN BIENT TEN	IP 27. IP 86.

ZONE UA BTU/HR-F 430.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-2.I BLDG 1721 - DAYROOM NIGHT SETBACK (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	RNAL S PERATU MAX		DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	65.	77.	54.	4 27	12 6	63. 4.	1.13	4.86	3.03	9.88
FEB	66.	77.	54.	17 2	13 6	59. 14.	1.02	4.39	2.73	8.93
MAR	67.	78.	54.	12 4	13 6		1.13	4.86	3.03	9.88
APR	71.	78.	55.	30 9	12 5		1.09	4.71	2.93	9.57
MAY	74.	79.	55.	31 11	24 5		1.13	4.86	3.03	9.88
JUN	77.	83.	66.	29 17	1 6		1.09	4.71	2.93	9.57
JUL	78.	89.	68.	16 10	3		1.13	4.86	3.03	9.88
AUG	78.	85.	64.	1 25	3		1.13	4.86	3.03	9.88
SEP	75.	84.	55.	3 15	2		1.09	4.71	2.93	9.57
OCT	71.	78.	55.	5 28	1 5		1.13	4.86	3.03	9.88
NOV	68.	77.	54.	8	12 6		1.09	4.71	2.93	9.57
DEC	65.	77.	54.	23 18			1.13	4.86	3.03	9.88
YEAR							13.32	57.27	35.63	116.38

BLDG 1721 - DAYROOM NIGHT SETBACK (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING	NUMBER OF	HOURS WHEN	MAXIMUM	LOADS	
		INCLUDING	LOADS WE	RE NOT MET	BTU		
MONTH	HEATING	ECONOMIZER	HEATING	COOLING	HEATING	COOLING	
JAN	614	16	20		7768E+05	.0000	
FEB	486	32	16	0	7768E+05	.1971E+05	
MAR	409	97	10	0	7768E+05	.4353E+05	
APR	175	225	0	0	7462E+05	.4926E+05	
MAY	37	368	Ŏ	0	5404E+05	.6064E+05	
	37	432	Ö	Ō	-4632.	.8004E+05	
JUN	0	454	ŏ	Ö	.0000	.8769E+05	
JUL	2	451	ŏ	Ö	1807E+05	.8075E+05	
AUG	_	365	0	ŏ	5729E+05	.8546E+05	
SEP	34		0	0	7222E+05	.6356E+05	
OCT	161	222			7768E+05	.4513E+05	
NOV	358	99	5	Ō			
DEC	605	16	22	0	7768E+05	.2047E+05	
YEAR	2883	2777	73	0	7768E+05	.8769E+05	

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-2.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	GY CONSUMPTION LIGHTING PROCE THOUSAND MILLIC KWH BTU		TO FANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	26.38	.00	1.13	4.86	.89	9.88	3.7
FEB	20.03	.00	1.02	4.39	.80	8.93	5.1
MAR	15.30	.06	1.13	4.86	.89	9.88	5.9
APR	5.50	.28	1.09	4.71	.86	9.57	6.2
MAY	.98	.58	1.13	4.86	.89	9.88	6.8
JUN	.04	1.07	1.09	4.71	.86	9.57	7.9
JUL	.00	1.29	1.13	4.86	.89	9.88	8.4
AUG	.05	1.20	1.13	4.86	.89	9.88	7.9
SEP	1.10	.76	1.09	4.71	.86	9.57	8.3
OCT	4.87	.26	1.13	4.86	.89	9.88	6.9
NOV	12.36	.08	1.09	4.71	.86	9.57	6.0
DEC	25.64	.00	1.13	4.86	.89	9.88	5.1
YEAR	112.26	5.58	13.32	57.27	10.44	116.38	8.4

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 140450. BTU/(SQFT-YEAR)

BLDG 1721 - DAYROOM NIGHT SETBACK (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. 1 DEG +	DRIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	7768E+05
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.1971E+05	7768E+05
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.4353E+05	7768E+05
APR	2242.	1552.	1.000	55.	ο.	0.	0	0	.4926E+05	7462E+05
MAY	2489.	1771.	1.000	65.	ο.	٥.	0	0	.6064E+05	5404E+05
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.8004E+05	-4632.
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8769E+05	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.8075E+05	1807E+05
SEP	1800.	1330.	1.000	68.	ο.	ο.	0	0	.8546E+05	5729E+05
OCT	1394.	924.	1.000	57.	0.	ο.	0	0	.6356E+05	7222E+05
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.4513E+05	7768E+05
DEC	856.	586.	1.000	35.	0.	0.	0	0	.2047E+05	7768E+05

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

LAST CASE FLAG (1=YES, 0=NO) (15000)
                                                       1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
                                                        1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
FILE NAME MO
STATION 13995
                   YEAR 1955
                                     37.750000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000
                                                              20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF WALLS (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMP OF BUILDING MASS (TO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)

INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS)

INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW)

0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 17278.000000
FLOOR AREA (SQFT) 1920.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 77680.000000 COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -96225.000000 COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 19200.000000
CONSTANT INFILTRATION RATE CFM (CFMI)
                                                 110.000000
INFILTRATION PROFILE
                                                                                       .800
                                             .800 .800
                                                                           .800
                                       .800
                          .800
            .800
  .800
                                                                                       1.00
                                      1.00 1.00 1.00
                                                                           1.00
            1.00 1.00
 .800
 1.00 1.00 1.00 1.00 1.00 .800
                                                                        .800
                                                                                      .800
A FACTOR IN INFILTRATION EQUATION (CINA) 3.820000E-01
B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
                                                    8.330000E-03
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
                                                    4800.000000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 157.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 16.380000
WINDOW GLASS NUMBER (NG) 30
WINDOW GLASS NUMBER (NG)
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO)
                                                    6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN)
                                                      6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
                                        WALL DATA
3
                                                       2
                                         1
```

MAX SOLAR WITH NO SHADE (SO	LMX) 120.0	120.0	120.0	120.0	
mmrr / / rth comm to / / r	1147 (• 4 4 4 4	
WALL TRANSFER FUNCTIONS	00471	00471	00471	.00471	
CN FACTORS	.004/1	.00471	5	5	
NUMBER OF BN FACTORS (NB	3	•	•		
BN FACTORS BN (BN)	.00000	.00000	.00000	.00000	
N=2	.00050	.00050	.00050	.00050	
N=3	.00243	.00243	.00243	.00243	
N=4	.00162	.00162	.00162	.00162	
N=5	.00017	.00017	.00017	.00017	
U VALUE BTU/(HR-SQFT-F) (COMPACTORS) CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	*****	*****	********	6	
NUMBER OF DN FACTORS (ND)	6	ь	O	Ū	
	1 00000	1 00000	1.00000	1.00000	
N=1	-1 73771	-1.73771	-1.73771	-1.73771	
N=2 N=3	.90936	.90936	.90936	.90936	
N=3 N=4	13373	13373	13373	13373	
N=5	.00496	.00496	.00496	.00496	
N=6	00001	00001	00001	00001	
DOOR AREA SORT LARORI	1320.00000				
ROOF U VALUE BTU/HR-SQFT-	F (URF) 4.6	00000E-02			
POOR TRANS FUNCTIONS USED	(1=YES, O=NO)	(IROOF)	1		
		841E-03			
ROOF B TRANSFER FUNCTIONS .886E-05 .130E-02 .487	(BNK) E-02 240E-02	177E-03	885.		
ROOF D TRANSFER FUNCTIONS		.1772 05	000.		
1.00 -1.18 .410	444E-01	.500E-03	999.		
EVVITOUR TITE DECREES (TI	T.T1 0.00000	0E+00			
SKYLIGHT AZIMUTH ANGLE DE	GREES (AZSK)	9999.000	0000		
CYVITCUT HEIGHT FT (SKH)	0.000000E+0	U			
SKYLIGHT WIDTH FT (SKW)	0.000000E+00				
SEVEL CHT OVERHANG WIDTH F	T (SKOW) U.	0000005+00	2007.00		
OVERHANG HEIGHT ABOVE SKY	LIGHT FT (SKOH) 0.0000)00E+00		
SKYLIGHT GLASS NUMBER (NS) 1	0 000000E±0	10		
SKYLIGHT GLASS NOMBER (NS SKYLIGHT SHADING COEFFICI SUMMER START MONTH AND DAY SUMMER END MONTH AND DAY	ENT (SHSK)	T NDSTI	1	1	L
SUMMER START MONTH AND DAY	FOR SHEK (MND.	ו מאמא	1	1	
SKY LIGHT AREA SQFT (ASKY DAYTIME SKY LIGHT U BTU/S NIGHT TIME SKYLIGHT U BTU FRACTION OF PROCESS HEAT) 0.000000E	+00	_		
DAYTIME SKY LIGHT U BTU/S	OFT-HR-F (SKYU) 1.	.292998		
NIGHT TIME SKYLIGHT U BTU	/SQFT-HR-F (SK	YUN)	1.292998		
FRACTION OF PROCESS HEAT	TO INTERNAL SP	ACE (FAP)	4.20000	DE-01	
WEEKEND COOLING THERMOSTA	T PROFILE			78.0	70 0
90.0 90.0 90.0	90.0	90.0	90.0	78.0	78.0
70 0 70 0 70 0	79.0	78.0	78.0	78.0	78.0
78.0 78.0 78.0	78.0	78.0	70.0	, 5.5	, , , ,
78.0 78.0 78.0	78.0	78.0	90.0	90.0	90.0
78.0 78.0 78.0	,0.0	,,,,	•		
WEEKEND HEATING THERMOSTA	T PROFILE				
55.0 55.0 55.0		55.0	55.0	68.0	68.0
20.0					
68.0 68.0 68.0	68.0	68.0	68.0	68.0	68.0
_		60.0	FF 0	EE 0	55.0
68.0 68.0 68.0	68.0	68.0	55.0	55.0	55.0

INTERNAL	GAINS	AND	PROFILES	
				THERMOSTAT SET
				POINT DEG F

KW - - - - - BTU/HR - - - - - PEOPLE PEOPLE
LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
3. 4452.
                                           4400.
                                5400.
 PEAK VAL
- - - - HOURLY FRACTION OF PEAK - - - -
   HOUR
                                                                90.0
90.0
                                                     55.0
55.0
           .100 .500 .000 .000
                                                    90.0
                                                                  90.0
                                                                  90.0
                                                                   90.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                   78.0
                                                                  78.0
                                                                  78.0
                                                                  78.0
                                                                  78.0
                                                                  78.0
                                                                 90.0
                                                      55.0
                                                     55.0
                                                                 90.0
                                                                   90.0
                                                       55.0
 SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 3490.000000
 ECONOMIZER HIGH TEMP LIMIT F 65.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 70.000000
 MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
 FAN EFFICIENCY (EFAN) 5.500000E-01
                                          1.600000
 FAN TOTAL PRESSURE IN. WATER (DP)
 HEATING PLANT RATED OUTPUT BTU (HFLOT) 78000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 97500.000000
 HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                                                 .369 .400 .451
                                          .300
                     .200
                              .286
           .191
                                                                      .812
                                        .700 .718
                                                            .800
                               .625
                      .600
            .537
  .500
 .900 .906 1.00 1.00
CHILLER TYPE (ITYPCH) 0
 COOLING PLANT RATED OUTPUT BTU (CFLOT) 96225.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 17789.000000
 COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                                       .370
                           .250 .300 .310
                                                             .400
          .200 .200
  .100
  .500 .450 .600 .550 .700 .650
                                                            .800
                                                                        .760
  .900 .880 1.00 1.00
```

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTITI DOOR AND				VENT AND	
> 43 TMTT	LOAD		THRU WINDOW	ROOF		BSMT	WALL	WINDOW		LATENT
MNTH	.00	CATN	2.72	.00	.00		.00	.00	.00	.00
JAN	-16.95	LOSS	2.,2	-2.18	-3.79			-2.21	-17.95	.00
	-10.33									
מינים	.02	GAIN	3.39	.00	.00	.00	.00	.00	.00	.01
		LOSS	3107	-1.80	-3.24	.00	-2.55	-1.90	-15.36	.00
	12.54									
MAR	.96	GAIN	4.40	.01	.00	.00	.11	.00	.00 -14.30	.13
		LOSS		-1.62	-3.03	.00	-1.90	-1.77	-14.30	.00
	3.00									
APR	4.59	GAIN	4.62	.07	.01	.00	.46	.01	.04 -8.63	.59
		LOSS		-1.00	-1.89	.00	85	-1.11	-8.63	.00
MAY	10.18	GAIN	5.07	.17	.04	.00	.95	.02	.13	2.25
	37	LOSS		69	-1.26	.00	34	71	-5.68	.00
										- 25
JUN	19.68	GAIN	5.09	.30	.13	.00	1.44	.08	.51	7.35
	.00	LOSS		47	76	.00	12	43	.51 -2.97	.00
										0.00
JUL	23.99	GAIN	5.28			.00	1.88	.23	1.57 -2.45	8.22
	.00	LOSS		42	62	.00	07	36	-2.45	.00
										0.30
AUG	22.36	GAIN	4.67	.37	.29	.00	1.54	.16	1.10	8.30
	01	LOSS		43	65	.00	09	36	-2.45	.00
							0.0	00	E0	E 10
SEP	13.58	GAIN	3.76	.16	.14	.00	.83	.09	.59	.00
	52	LOSS		65	-1.04	.00	36	60	-4.62	.00
						00	0.0	0.1	06	1.05
OCT		GAIN	3.17	.03	.02		1.00	-1 02	.06 -7.71	-00
	-2.33	LOSS		-1.10	-1.80	.00	-1.08	-1.03	-/./1	•00
				00	00	.00	0.3	00	.00	.22
NOV	1.02		2.51	.00	.00 -2.48	.00	_1 99	-1 42	-10.90	- 00
	-6.95	LOSS		-1.48	-2.48	.00	-1.55	1.42	10.30	•••
			0.46	00	00	00	00	. 00	.00	.00
DEC	.05	GAIN	2.46	2 16	-3.70	.00	-3 51	-2.13	-17.13	.00
	-16.32	LOSS		-2.10	-3.70	.00	3.31	2.10		• • • • • • • • • • • • • • • • • • • •
50	100	CATA	47	າ	1	0.	7.	1.	4. -110	33.
TOT	100.	GAIN	47.	_14	-24	0.	-16.	-14.	-110.	0.
	-68.	FOSS		-74.	44.	٠.				
MAY	UPATING	T.OAD=	-7	7680.	BTUH ON	DEC 28	HOUR 7	AMI	BIENT TE	MP 27.
VAL	COOLING	LOAD=	, ,	5094.	BTUH ON	JUL 3	HOUR 12	AM	BIENT TE	MP 86.
LIMA	COULING	70117								

ZONE UA BTU/HR-F 430.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-1.1

									FAN	TOTAL
INTERNA MONTH	INTE	PERAT	SPACE URE F MIN	DAY	(OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	64.	79.	54.	3 27	15 6	63. 4.	1.13	4.86	3.03	9.88
FEB	65.	79.	54.	17 2	13 6		1.02	4.39	2.73	8.93
MAR	67.	80.	54.	12 4	13 6		1.13	4.86	3.03	9.88
APR	71.	80.	55.	30 9	12 5		1.09	4.71	2.93	9.57
MAY	75.	80.	55.	31 11	23 5		1.13	4.86	3.03	9.88
JUN	78.	84.	66.	29 17	1		1.09	4.71	2.93	9.57
JUL	80.	89.	68.	16 10	3 6		1.13	4.86	3.03	9.88
AUG	79.	85.	64.	1 25	2 6		1.13	4.86	3.03	9.88
SEP	76.	85.	55.	3 15	1 6		1.09	4.71	2.93	9.57
OCT	71.	80.	55.	5 28	12 5		1.13	4.86	3.03	9.88
NOV	67.	79.	54.	8 3	12 6		1.09	4.71	2.93	9.57
DEC	64.	79.	54.	12 18	16 6		1.13	4.86	3.03	9.88
YEAR							13.32	57.27	35.63	116.38

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF	HOURS WHEN	MAXIMUM BT	
MONTH	HEATING	ECONOMIZER		COOLING	HEATING	COOLING
TAN	608	10	13	0	7768E+05	.0000
JAN	468	18	11	0	7768E+05	.1762E+05
FEB		76	4	Ō	7768E+05	.4078E+05
MAR	397	* =	=	•	6694E+05	.4686E+05
APR	161	204	0	•	4659E+05	.5837E+05
MAY	31	347	0	•		
JUN	0	414	0	0	.0000	.7752E+05
JUL	0	446	0	0	.0000	.8509E+05
	1	441	0	0	1085E+05	.7823E+05
AUG	21	339	Õ	0	4987E+05	.8270E+05
SEP	31		ŏ		6459E+05	.6113E+05
OCT	145	186		_	7768E+05	.4303E+05
NOV	344	77	2	•	• • • • • • •	
DEC	595	8	14		7768E+05	.1327E+05
YEAR	2781	2566	44	0	7768E+05	.8509E+05

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-1.I

SYSTEM TOTALS

		ENERG		TOTAL INTERNAL MAXIMU					
	HEATING	COOLING	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND		
MONTH	MILLION BTU	THOUSAND KWH	KWH	BTU	KWH	BTU	KW		
			1.13	4.86	.89	9.88	3.7		
JAN	25.02	.00	1.13	4.00					
FEB	18.76	.00	1.02	4.39	.80	8.93	5.0		
MAR	14.30	.06	1.13	4.86	.89	9.88	5.8		
APR	4.87	.26	1.09	4.71	.86	9.57	6.0		
MAY	.77	.54	1.13	4.86	.89	9.88	6.6		
JUN	.00	1.00	1.09	4.71	.86	9.57	7.7		
JUL	.00	1.22	1.13	4.86	.89	9.88	8.2		
AUG	.02	1.13	1.13	4.86	.89	9.88	7.8		
SEP	.93	.70	1.09	4.71	.86	9.57	8.1		
OCT	4.25	.24	1.13	4.86	.89	9.88	6.8		
NOV	11.41	.07	1.09	4.71	.86	9.57	5.9		
DEC	24.29	.00	1.13	4.86	.89	9.88	4.9		
YEAR	104.62	5.21	13.32	57.27	10.44	116.38	8.2		

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 135819. BTU/(SQFT-YEAR)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- I DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL		MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	7768E+05
FEB	1421.	901.	1.000	37.	0.	ο.	0	0	.1762E+05	7768E+05
MAR	1864.	1216.	1.000	43.	0.	Ο.	0	0	.4078E+05	7768E+05
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.4686E+05	6694E+05
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.5837E+05	4659E+05
JUN	2567.	1933.	1.000	72.	0.	ο.	0	0	.7752E+05	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8509E+05	.0000
AUG	2211.	1784.	1.000	76.	0.	ο.	0	0	.7823E+05	1085E+05
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.8270E+05	4987E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.6113E+05	6459E+05
NOV	1008.	710.	1.000	47.	0.	٥.	0	0	.4303E+05	7768E+05
DEC	856.	586.	1.000	35.	0.	0.	0	0	.1327E+05	7768E+05

BLDG 1721 - DAYROOM ECONOMIZER (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK)
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
SKY CLEARNESS FACTOR (CLN) 9.700000E-01
                                            1
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1

OF TABLE IN TABLE ECT. (ISW)

O
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
STATION 13995
                      YEAR 1955
                                        37.750000
SITE LATITUDE DEG (AL1)
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

6.800000E-01

3.500000E-01
INITIAL TEMPERATURE OF BUILDING MASS (TO)

70.000000

70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 17278.000000
FLOOR AREA (SQFT) 1920.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX)

COOLING COIL MAX COOLING RATE BTU/HR (QCMAX)

COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA)

19200.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 110.000000
INFILTRATION PROFILE
                                                                                          .800
                                                                                                         .800
                                                                           .800
                               .800
                                             .800
                                                           .800
              .800
                                            1.00
                                                           1.00
                                                                          1.00
                                                                                        1.00
                                                                                                        1.00
                             1.00
               1.00
  .800
                                                           1.00 .800 .800
                                                                                                       .800
                             1.00
                                             1.00
               1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA)
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)

3.820000E-01
2.165000E-02
8.330000E-03
4800.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 157.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 16.380000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
WALL NUMBER
1 2 3 4

AZIMUTH ANGLE (AZ) -45.00 45.00 135.00 -135.00

WALL AREA SQFT (AWLL) 313.0 539.0 472.0 556.0

WINDOW AREA SQFT (AWND) 60.0 72.0 60.0 .0

WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0

WINDOW WIDTH FT (WNDW) 6.0 7.2 6.0 .0

WIDTH OF OVERHANG (WOH) 6.8 2.0 6.8 .0

OVERHANG HGT ABV WNDW(HOH) .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)					
WALL TRANSFER FUNCTIONS					
CN FACTORS	.00471	.00471	.00471	.00471	
U VALUE BTU/(HR-SQFT-F) (UW) WALL TRANSFER FUNCTIONS CN FACTORS NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND) DN FACTORS	5	5	5	5	
N=1	.00000	.00000	.00000	.00000	
N=2	.00050	.00050	.00050	.00050	
N=3	.00243	.00243	.00243	.00243	
N=4	.00162	.00162	.00162	.00162	
N=5	.00017	.00017	.00017	.00017	
N=6	*****	*****	****	**************************************	
NUMBER OF DN FACTORS (ND)	6	6	0	0	
DN FACTORS			1 00000	1 00000	
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	_1.00000	
N=2	-1.73771	-1.73771	-1./3//1	-1./2//1	
N=3	.90936	.90936	12272	_ 13373	
N=4	13373	133/3	133/3	13373	
N=5	.00496	.00496	.00496	- 00001	
N=6	00001	00001	00001	00001	
ROOF AREA SQFT (AROF) 1920	.000000				
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y ROOF C TRANSFER FUNCTION (CNR)	(F) 4.60	0000E-02	1		
POOF TRANS FUNCTIONS USED (1=Y	ES, O=NO)	(IROOF)	1		
		41E-03			
			005		
.886E-05 .130E-02 .487E-02	.240E-02	.1//E-03	665.		
ROOF D TRANSFER FUNCTIONS (DNF	()	E00E 03	000		
1.00 -1.18 .410	444E-U1	.5005-03	333.		
SKYLIGHT TILT DEGREES (TILT)	0.00000	0000 000	000		
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	000		
SKYLIGHT HEIGHT FT (SKH) 0.	.000000E+00	,			
SKYLIGHT WIDTH FT (SKW) 0.0	0000008+00	000005+00			
SKYLIGHT OVERHANG WIDTH FT (SK	(OW) 0.0	0.000	005700		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	005+00		
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR SUMMER END MONTH AND DAY FOR S	CHCA) T	00000000	in		
SKYLIGHT SHADING COEFFICIENT (SUSK) (MET	י אסטטטטפיט	0 1 1	1	
SUMMER START MONTH AND DAY FOR	nen (WW) y	ו מאמי	1	1	
SUMMER END MONTH AND DAI FOR S	TOUDDOO ACT	-00	-	_	
SUMMER END MONTH AND DAT FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT FRACTION OF PROCESS HEAT TO IN	D-E (SKAII)	1.	292998		
DAYTIME SKY LIGHT U BIU/SQFI-F	L-HD-E (CKA	TIN)	1,292998		
NIGHT TIME SKILIGHT O BIO/SQLI	ITEDNAT SPA	CE (FAP)	4.200000	DE-01	
WEEKEND COOLING THERMOSTAT PRO	TERMAN DIR				
90.0 90.0 90.0	00 0	90.0	90.0	78.0	78.0
90.0 90.0 90.0	30.0	30.0	2000		
78. 0	78.0	78.0	78.0	78.0	78.0
78.0 70.0 70.0					
78.0	78.0	78.0	90.0	90.0	90.0
78.0	. •				
WEEKEND HEATING THERMOSTAT PRO	OFILE				
55.0 55.0 55.0			0	60 0	
33.0 33.0	55.0	55.0	55.0	68.0	68.0
	55.0	55.0			
68.0 68.0 68.0	55.0 68.0	55.0 68.0	68.0	68.0	68.0 68.0
68.0 68.0 68.0	55.0		68.0	68.0	68.0
68.0 68.0 68.0 68.0 68.0 68.0	55.0				

INTERNAL	GAINS AN	D PROFILES	
			THERMOSTAT SET
			POINT DEG F
кw B	ru/HR		

PEOPLE PEOPLE

LIGHTS PROCESS SENSIBLE LATENT HEATING COOLING

```
4400.
          3. 4452.
                              5400.
PEAK VAL
          - - - - HOURLY FRACTION OF PEAK - - - -
HOUR
                                                            90.0
                                                  55.0
          .100 .500 .000 .000
                                                             90.0
                                                  55.0
                                                              90.0
                                                  55.0
                                               55.0
                                                              90.0
                                                              90.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                              78.0
                                                             78.0
                                                             78.0
                                                             78.0
                                                            90.0
                                                   55.0
                                                 55.0
55.0
                                                              90.0
SYSTEM TYPE, (IECN) 2
SUPPLY AIR CFM (SACFM) 3490.000000
ECONOMIZER HIGH TEMP LIMIT F 75.000000
SYSTEM SUPPLY AIR START TIME HR 0.000000E+00
SYSTEM SUPPLY AIR STOP TIME HR 24.000000
SYSTEM MIXED AIR TEMP(TMXAIR) 70.000000
MIN OUTSIDE AIR FRACTION OF SACFM (OAFR) 1.000000E-01
FAN EFFICIENCY (EFAN) 5.500000E-01
FAN TOTAL PRESSURE IN. WATER (DP)
                                       1.600000
HEATING PLANT RATED OUTPUT BTU (HFLOT) 78000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 97500.000000
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)
                            .286 .300 .369 .400 .451
          .191
                    .200
 .100
                            .625 .700 .718 .800 .812
                    .600
 .500
          .537
.900 .906 1.00 1.00 CHILLER TYPE (ITYPCH) 0
COOLING PLANT RATED OUTPUT BTU (CFLOT) 96225.000000
COOLING PLANT RATED INPUT BTU (CFLIN) 17789.000000
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)
                                                         .400
                                                                   .370
                           .250 .300 .310
          .200
                .200
  .100
                                      .700 .650
                                                         .800
                                                                  .760
                            .550
  .500 .450 .600
         .880
                  1.00
                            1.00
  .900
```

BLDG 1721 - DAYROOM ECONOMIZER (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

MNTH JAN	LOAD .00 -16.95		SOLAR THRU WINDOW 2.72	ROOF	PARTITI DOOR AND SLAB .00 -3.79	BSMT	.00	WINDOW .00 -2.21 -1		
FEB	.00		3.39		.00	.00	.00 -2.55	.00 -1.90 -1	.00 15.37	.00
		GAIN LOSS	4.40	.01 -1.62	.00 -3.03	.00	.11 -1.90	.00 -1.77 -1	.00 14.89	.11
APR	3.42 -2.79		4.62	.07 -1.00	.01 -1.89			.01 -1.11 -:		
MAY	9.50 37		5.07	.17 69	.04 -1.26	.00	.95 34	.02 71	.13 -8.02	3.91 .00
JUN	19.94 .00		5.09	.30 48	.13 79	.00	1.41 13	.08 45	.51 -5.41	10.14
JUL	24.19 .00		5.28	.46 43	.39 66	.00	1.85 08	.23 38	1.56 -3.93	10.03
AUG	22.83 01		4.67		.29 71	.00	1.49 12	.16 40	1.10 -4.07	10.59
SEP	13.20 52		3.76	.16 65	.14 -1.06		.82 37	.09 61	.59 -6.63	6.81 .00
OCT	3.02 -2.33		3.17	.03 -1.10	.02 -1.80	.00	.20 -1.08	.01 -1.03	.06 -9.15	1.47 .00
NOV	.33 -6.95		2.51	.00 -1.48	.00 -2.48	.00	.03 -1.99	.00 -1.42 -	.00 11.57	.20 .00
DEC	.00 -16.32	GAIN LOSS	2.46	.00 -2.16	.00 -3.70	.00	.00 -3.51	.00 -2.13 -	.00 17.18	.00
TOT	96.78 -67.85	GAIN LOSS	47.13	1.55 -14.07	1.02 -24.42	.00	7.31 -16.41	.59 -14.10-1	4.00 24.77	44.64 .00
MAX MAX	HEATING COOLING	LOAD=	-7 9	7680. 6225.	BTUH ON BTUH ON	DEC 28 OCT 15	HOUR 7	AMBI	ENT TE	MP 27. MP 71.

ZONE UA BTU/HR-F 430.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-3.I BLDG 1721 - DAYROOM ECONOMIZER (FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA MONTH	INTE	PERAT	SPACE URE F MIN	DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	64.	79.	54.	3 27	15 6	63. 4.	1.13	4.86	3.03	9.88
FEB	65.	79.	54.	17 2	13 6	59. 14.	1.02	4.39	2.73	8.93
MAR	67.	80.	54.	12 4	13 6	74. 15.	1.13	4.86	3.03	9.88
APR	71.	80.	55.	30 9	12 5	80. 30.	1.09	4.71	2.93	9.57
MAY	75.	80.	55.	31 11	23 5		1.13	4.86	3.03	9.88
JUN	78.	91.	66.	23 17	10 6		1.09	4.71	2.93	9.57
JUL	80.	93.	68.	30 10	21 6	75. 60.	1.13	4.86	3.03	9.88
AUG	80.	96.	64.	21 25	11 6		1.13	4.86	3.03	9.88
SEP	76.	90.	55.	4 15	14 6		1.09	4.71	2.93	9.57
OCT	71.	82.	55.	5 28	15 5	73. 31.	1.13	4.86	3.03	9.88
NOV	67.	79.	54.	8	12 6		1.09	4.71	2.93	9.57
DEC	64.	79.	54.	12 18	16 6		1.13	4.86	3.03	9.88
YEAR							13.32	57.27	35.63	116.38

BLDG 1721 - DAYROOM ECONOMIZER (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF LOADS WE	HOURS WHEN	MAXIMUM BTU	
MONTH	HEATING	ECONOMIZER	HEATING		HEATING	COOLING
JAN	608	10	13	0	7768E+05	.0000
FEB	468	18	11	0	7768E+05	.0000 .6038E+05
MAR	397	76	4	0	7768E+05	.7343E+05
APR	161	204	0	0	6694E+05 4659E+05	.9623E+05
MAY	31	347	0	32	.0000	.9623E+05
JUN	0	414	0 0	22	.0000	.9623E+05
JUL	0	447 442	0	27	1085E+05	.9623E+05
AUG	1 1	339	Ö	19	4987E+05	.9623E+05
SEP	31 145	186	ŏ	2	6459E+05	.9623E+05
OCT NOV	344	77	2	Ō	7768E+05	.6216E+05
DEC	595	8	14	0	7768E+05	.0000
YEAR	2781	2568	44	103	7768E+05	.9623E+05

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-3.I

SYSTEM TOTALS

MONTH	HEATING MILLION BTU	ENERG COOLING THOUSAND KWH	Y CONSUMPT LIGHTING THOUSAND KWH	PION PROCESS MILLION BTU	TANS THOUSAND KWH	OTAL INTERNAL HEAT GAIN MILLION BTU	MAXIMUM ELECTRIC DEMAND KW
JAN	25.02	.00	1.13	4.86	.89	9.88	3.7
FEB	18.76	.00	1.02	4.39	.80	8.93	3.7
MAR	14.30	.02	1.13	4.86	.89	9.88	6.8
APR	4.87	.18	1.09	4.71	.86	9.57	7.5
MAY	.77	.49	1.13	4.86	.89	9.88	8.8
JUN	.00	1.01	1.09	4.71	.86	9.57	9.0
JUL	.00	1.23	1.13	4.86	.89	9.88	9.0
AUG	.02	1.15	1.13	4.86	.89	9.88	9.0
SEP	.93	.68	1.09	4.71	.86	9.57	9.0
OCT	4.25	.16	1.13	4.86	.89	9.88	9.0
NOV	11.41	.02	1.09	4.71	.86	9.57	6.9
DEC	24.29	.00	1.13	4.86	.89	9.88	3.7
YEAR	104.62	4.95	13.32	57.27	10.44	116.38	9.0

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 135354. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-3.I

BLDG 1721 - DAYROOM ECONOMIZER (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- H DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS TEMP. DEG +		HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	7768E+05
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.0000	7768E+05
MAR	1864.	1216.	1.000	43.	0.	٥.	0	0	.6038E+05	7768E+05
APR	2242.	1552.	1.000	55.	0.	ο.	0	0	.7343E+05	6694E+05
MAY	2489.	1771.	1.000	65.	0.	0.	1	0	.9623E+05	4659E+05
JUN	2567.	1933.	1.000	72.	0.	0.	32	0	.9623E+05	.0000
JUL	2470.	1954.	1.000	77.	0.	0.	22	0	.9623E+05	.0000
AUG	2211.	1784.	1.000	76.	0.	0.	27	0	.9623E+05	1085E+05
SEP	1800.	1330.	1.000	68.	0.	0.	19	0	.9623E+05	4987E+05
OCT	1394.	924.	1.000	57.	0.	ο.	2	0	.9623E+05	6459E+05
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.6216E+05	7768E+05
DEC	856.	586.	1.000	35.	0.	0.	0	0	.0000	7768E+05

BLDG 1721 - DAYROOM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1

ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
WEEKEND INTERNAL GAINS FACTOR (WKEND)

LAST CASE FLAG (1=YES, 0=NO) (LSTCS)

SKY CLEARNESS FACTOR (CLN)

NUMBER OF ZONES (NZ)

1.000000

1.000000

1
NUMBER OF ZONES (NZ)
NUMBER OF ZONES (NZ)
WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
----- SITE AND BUILDING DATA -----
*****REAL WEATHER FROM DISK******
 FILE NAME MO
                         YEAR 1955
STATION 13995
SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000
MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000
AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA)

SOLAR ABSORBTIVITY OF ROOF (ALFRF)

SOLAR REFLECTANCE OF GROUND (RHOG)

2.000000E-01
INITIAL TEMP OF AIR IN BUILDING DEG F (TAO) 70.000000 INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 17278.000000
FLOOR AREA (SQFT) 1920.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX) 77680.000000
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -96225.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 19200.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 110.000000
INFILTRATION PROFILE
                                                                                              .000
                                                                                                               1.00
                                                                               .000
                                                .000 .000
           .000
                               .000
                                                                               1.00
                                                                                                               1.00
                                                               1.00
                                                                                               1.00
 1.00 1.00 1.00
                                               1.00
                                                                               .000
                                                                                                .000
                                                                                                               .000
                                                .000
                                                               .000
                               .000
                .000
  .000
A FACTOR IN INFILTRATION EQUATION (CINA) 3.820000E-01 B FACTOR IN INFILTRATION EQUATION (CINB) 2.165000E-02
C FACTOR IN INFILTRATION EQUATION (CINC) 8.330000E-03
RUILDING THERMAL MASS MCP BTU/F (CMCP) 4800.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP) 4800.000
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 157.00000
                                                               157.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 16.380000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
WALL NUMBER
1 2 3 4
AZIMUTH ANGLE (AZ) -45.00 45.00 135.00 -135.00
WALL AREA SQFT (AWLL) 313.0 539.0 472.0 556.0
WINDOW AREA SQFT (AWND) 60.0 72.0 60.0 .0
WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0
WINDOW WIDTH FT (WNDW) 6.0 7.2 6.0 .0
WIDTH OF OVERHANG (WOH) 6.8 2.0 6.8 .0
OVERHANG HGT ABV WNDW(HOH) .0 .0 .0
```

MAX SOLAR WITH NO SHADE (SOLMX) U VALUE BTU/(HR-SQFT-F) (UW)	120.0 .110	120.0 .110	120.0 .110	120.0 .110
CN FACTORS	.00471	.00471	.00471	.00471 5
NUMBER OF BN FACTORS (NB BN FACTORS BN (BN) N=1 N=2 N=3 N=4 N=5 N=6 NUMBER OF DN FACTORS (ND)	.00000	.00000	.00000	.00000
N=3	.00243	.00243	.00243	.00243
N=4	.00162	.00162	00162	.00102
N=5	.00017	******	*****	*****
N=6	6	6	6	6
DN FACTORS	Ū	•		
DN FACTORS N=1 N=2 N=3 N=4 N=5 N=6	1.00000	1.00000	1.00000	1.00000
N=2	-1.73771	-1.73771	-1.73771	-1.73771
N=3	.90936	.90936	.90936	.90936
N=4	13373	13373	13373	13373
N=5	.00496	.00496	.00496	- 00001
N=6	00001	00001	00001	00001
DOOF APEA SOFT (AROF) 1920	.000000			
ROOF U VALUE BTU/HR-SQFT-F (UR ROOF TRANS FUNCTIONS USED (1=Y	FC 0-NO)	(TROOF)	1	
ROOF TRANS FUNCTIONS USED (1-1	8.7568	41E-03		
ROOF C TRANSFER FUNCTION (CNR) ROOF B TRANSFER FUNCTIONS (BNR	3			
.886E-05 .130E-02 .487E-02	.240E-02	.177E-03	885.	
DOOR D MDANCEED FINCTIONS (DNR	1			
1 00 -1.18 .410	444E-01	.500E-03	999.	
SKYLIGHT TILT DEGREES (TILT)	0.000000)E+00	1000	
SKYLIGHT AZIMUTH ANGLE DEGREES	(AZSK)	9999.000	0000	
SKYLIGHT HEIGHT FT (SKH) 0. SKYLIGHT WIDTH FT (SKW) 0.0	000000E+00	,		
SKYLIGHT WIDTH FT (SKW) U.G. SKYLIGHT OVERHANG WIDTH FT (SK	OW) 0.0	000000E+00		
OVERHANG HEIGHT ABOVE SKYLIGHT	FT (SKOH)	0.0000	00E+00	
TOUR OF BOO NUMBER (NC)	1			
SKYLIGHT GLASS NUMBER (NS) SKYLIGHT SHADING COEFFICIENT (SUMMER START MONTH AND DAY FOR S SUMMER END MONTH AND DAY FOR S	SHSK)	.00000E+0	00	_
SUMMER START MONTH AND DAY FOR	SHSK (MS)	r, NDST)	1	1
SUMMER END MONTH AND DAY FOR S	HSK (MND,	NDND)	1	7
SUMMER END MONTH AND DAY FOR S SKY LIGHT AREA SQFT (ASKY) DAYTIME SKY LIGHT U BTU/SQFT-H NIGHT TIME SKYLIGHT U BTU/SQFT	O.000000E	1	202008	
DAYTIME SKY LIGHT U BTU/SQFT-H	IK-E (SKIU)) 1. Intl	1.292998	
FRACTION OF PROCESS HEAT TO IN	nk-r (SK) Itronat. SDI	ACE (FAP)	4.200000)E-01
EKACTION OF PROCESS HEAT TO IN	THIMBH DEE	()		

-----INTERNAL GAINS AND PROFILES -----THERMOSTAT SET POINT DEG F KW - - - - - BTU/HR - - - - -PEOPLE PEOPLE LIGHTS PROCESS SENSIBLE LATENT 3. 4452. 5400. 4400. --- HOURLY FRACTION OF PEAK ---HEATING COOLING PEAK VAL HOUR .000 76.0 70.0 .000 .100 .500 1 .100 .100 .100 .100 .100 .600 .000 .500 76.0 70.0 .000 2 .000 70.0 76.0 .000 3 76.0 .000 70.0 .500 4 76.0 70.0 .500 .000 5 .000 70.0 76.0 .500 .000 6 .100 76.0 .100 70.0 .500 7 .100 76.0 .100 70.0 .500 8 .100 .100 70.0 76.0 .500 9 .600 76.0 .700 .200 70.0 1.000 10 76.0 .800 .500 70.0 1.000 .500 .800 .500 .900 1.000 11 76.0 70.0 1.000 1.000

12

17 18 19 20 21 22 23 24 NO HEAT NO COOL	1.000 1.000 1.000 1.000 1.000 .600 .100 .1	.500 .500 .700 .800 .900 .800 .700 .500 .500 .500 BIENT TEMP	.100 .100 .200 .500 1.000 .500 .400 .000 .000 .000	.100 .200 .500	70.0 70.0 70.0 70.0		76.0
	TIPE, LIECH)		L				
SUPPLY	AIR CFM (SAC	FM) 349	0.00000				
ECONOMI	ZER HIGH TEM	P LIMIT F	65.00	00000			
SYSTEM :	SUPPLY AIR S'	TART TIME	HR 0.000	0000E+00			
SYSTEM S	SUPPLY AIR S'	TOP TIME H	R 24.	000000			
SYSTEM I	MIXED AIR TE	MP(TMXAIK)	/U.UL / DEW / AFD	1 000	000E-01		
	SIDE AIR FRA	17 E E O	$\Lambda\Lambda\Lambda\Lambda \nabla v = \Lambda 1$				
FAN EFF.	ICIENCY (EFA	א) סיסידיגעט און און און	(DD)	1.60000	0		
FAN TOTA	AL PRESSURE DELANT RATED	ON: WAIER	TOTAN II	78000.00	0000		
DEATING	PLANT RATED	INPUT BTU	(HFLIN)	97500.00	0000		
.100	.191	.200	.286	.300	.369	.400	.451
.500	.537	.600	.625	.700	.718	.800	.812
.900	.906	1.00	1.00				
CHILLER	TYPE (ITYPC	d)	U (CELOE)	06225 0	00000		
COOLING	PLANT RATED PLANT RATED	TNDUM POU	(CFLOI)	17789.00	0000		
COOLING	PLANT RATED	TWENT BIO	US FRAC RAT	ED COP (P	LC)		
100	.200	.200	.250	.300	.310	.400	.370
.500	.450	.600	.550	.700	.650	.800	.760
.900	.880	1.00	1.00				

BLDG 1721 - DAYROOM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR		PARTIT				VENT	
			THRU	DOOF	AND	DCMT	WATT	WINDO	AND INFL	LATENT
MNT	LOAD .00	CATN	WINDOW	ROOF	PLAB	.00	WALL	-00	.00	-00
JAN	-22.05	TOCC	2.12	-2 59	-4.59	.00	-4.44		-20.36	
FFB	.02	GATN	3.39	- 00	.00	.00	.00	.00	.00	.01
	-16.91	LOSS	••••	-2.15	-3.92	.00	-3.36	-2.29	-17.49	.00
MAR	1.06	GAIN	4.40	.01	.00	.00	.10 -2.64	.00	.00	.12
	-13.19	LOSS		-1.94	-3.66	.00	-2.64	-2.14	-16.26	.00
										<i>c</i> 1
APR	5.09	GAIN	4.62	.08	.02		.48	.01	.08	.61
	-5.00	LOSS		-1.16	-2.19	.00	-1.23	-1.28	-9.4/	.00
			- 0-	00	07	00	1.03	04	25	2 31
MAY	11.22		5.07	.20	-1.28	.00	42	- 72	-5 54	.00
	-1.05	LOSS		/2	-1.20	.00	. 42	• , 2	3.34	
TT737	22.65	CATN	E 00	35	20	- 00	1.66	.12	.77	8.46
JUN	05		5.09	- 41	62	.00	09	35	-2.14	.00
	05	TOSS		• 41	•02					
TITT.	29.27	GATN	5.28	.53	.52	.00	2.29	.31	1.99 -1.35	10.76
UUL	.00		0.20	30		.00	04	22	-1.35	.00
	.00									
AUG	27.36	GAIN	4.67	.43	.39	.00		.22	1.44	10.84
	04	LOSS		32	42	.00	05	24	-1.42	.00
								10	70	6 17
SEP	16.13		3.76	.19	.20	.00	.99	.12	. 79	6.17
	-1.34	LOSS		64	-1.03	.00	43	59	-4.32	.00
			2 15	0.3	.03	00	.22	02	11	1.11
OCT	4.58		3.17	1 26	-2.12		-1 46	-1 21	-8.55	.00
	-4.60	LOSS		-1.20	-2.12	.00	-1.40	1.21	0.55	
MOIT	1 10	CATM	2 51	00	.00	.00	.03	.00	.00	.22
MOA	1.19 -10.40	TOSS	2.51	-1.75	-3.01	.00	-2.62	-1.72	-12.45	.00
DEC	.06 -21.36	GATN	2.46	.00	.00	.00	.00	.00	.00	.00
ספט	-21.36	LOSS		-2.57	-4.50	.00	-4.47	-2.60	-19.51	.00
TOT	119.	GAIN	47.	2.	1.	0.	9.	1.	5.	41.
	-96.	LOSS		-16.	-28.	0.	-21.	-16.	-119.	0.
					D	DEC 10	TIOTIP O	7, 3,41	מיחי מואים ב	MD 2
MAX	HEATING	LOAD=	-7	7680.	BTUH ON	DEC 18	HOUR 12	AM	SIENU UD STENI IN	MP 3. MP 86.
MAX	COOLING	LOAD=	8	536/.	BIUD ON	00T 2	HOUR 12	FILL	III	

ZONE UA BTU/HR-F 430.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-4.I BLDG 1721 - DAYROOM OUTSIDE AIR (NIGHTIME)(FT LEONARD WOOD, MO)

									FAN	TOTAL
MONTH	INTE	RNAL : PERATI MAX		DAY		OIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
JAN	70.	77.	68.	4 27	12 6	63. 4.	1.13	4.86	3.03	9.88
FEB	71.	77.	69.	17 2	13 6	59. 14.	1.02	4.39	2.73	8.93
MAR	71.	78.	69.	12 4	13 6	74. 15.	1.13	4.86	3.03	9.88
APR	73.	78.	69.	30 9	12 5	80. 30.	1.09	4.71	2.93	9.57
MAY	75.	78.	69.	28 11	12 5	85. 39.	1.13	4.86	3.03	9.88
JUN	76.	78.	70.	22 17	12 5	84. 56.	1.09	4.71	2.93	9.57
JUL	77.	78.	70.	3 10	12 6	86. 60.	1.13	4.86	3.03	9.88
AUG	77.	78.	70.	19 25	12 6	87. 51.	1.13	4.86	3.03	9.88
SEP	75.	78.	70.	3 15	12 6	89. 39.	1.09	4.71	2.93	9.57
OCT	73.	78.	69.	5 28	12 5	84. 31.	1.13	4.86	3.03	9.88
NOV	72.	77.	69.	8 3	12 6	74. 18.	1.09	4.71	2.93	9.57
DEC	70.	77.	63.	29 18	18 8	57. 1.	1.13	4.86	3.03	9.88
YEAR							13.32	57.27	35.63	116.38

BLDG 1721 - DAYROOM OUTSIDE AIR (NIGHTIME) (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

MONTH	HEATING	COOLING INCLUDING ECONOMIZER	NUMBER OF I LOADS WERI HEATING CO		MAXIMUM BTT HEATING	
JAN	675	16	1	0	7768E+05	.0000
FEB	555	32	0	0	6668E+05	.1891E+05
MAR	516	97	0	0	6657E+05	.4323E+05
APR	285	231	0	0	4092E+05	.4922E+05
MAY	101	389	0	0	2743E+05	.6058E+05
JUN	14	525	Ö	0	-6653.	.8062E+05
JUL	2	641	0	0	-2120.	.8837E+05
AUG	8	629	Ö	0	1066E+05	.8153E+05
SEP	110	444	0	0	2622E+05	.8619E+05
OCT	284	228	Ö	0	3819E+05	.6355E+05
NOV	466	103	Ö	0	5659E+05	.4506E+05
	679	16	12	Ō	7768E+05	.1754E+05
DEC	3695	3351	13	ŏ	7768E+05	.8837E+05
YEAR	3695	2321	13	U		

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-4.I

SYSTEM TOTALS

		ENERG	Y CONSUMPT	ON	TOTAL INTERNAL MAXIMUM					
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND			
MONTH		KWH	KWH	BTU	KWH	BTU	KW			
JAN	31.07	.00	1.13	4.86	.89	9.88	3.7			
FEB	24.35	.00	1.02	4.39	.80	8.93	5.0			
MAR	19.93	.06	1.13	4.86	.89	9.88	5.9			
APR	8.68	.28	1.09	4.71	.86	9.57	6.1			
MAY	2.38	.59	1.13	4.86	.89	9.88	6.8			
JUN	.26	1.18	1.09	4.71	.86	9.57	7.9			
JUL	.04	1.53	1.13	4.86	.89	9.88	8.4			
AUG	.15	1.43	1.13	4.86	.89	9.88	8.0			
SEP	2.71	.85	1.09	4.71	.86	9.57	8.3			
OCT	8.19	.26	1.13	4.86	.89	9.88	6.9			
NOV	16.37	.08	1.09	4.71	.86	9.57	6.0			
DEC	30.48	.00	1.13	4.86	.89	9.88	5.0			
YEAR	144.62	6.27	13.32	57.27	10.44	116.38	8.4			

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 158539. BTU/(SQFT-YEAR)

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-4.I BLDG 1721 - DAYROOM OUTSIDE AIR (NIGHTIME)(FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYST TEMP. D DEG. +	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	7768E+05
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.1891E+05	6668E+05
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.4323E+05	6657E+05
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.4922E+05	4092E+05
MAY	2489.	1771.	1.000	65.	ο.	0.	0	0	.6058E+05	2743E+05
JUN	2567.	1933.	1.000	72.	0.	٥.	0	0	.8062E+05	-6653.
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8837E+05	-2120.
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.8153E+05	1066E+05
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.8619E+05	2622E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.6355E+05	3819E+05
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.4506E+05	5659E+05
DEC	856.	586.	1.000	35.	0.	ο.	0	0	.1754E+05	7768E+05

BLDG 1721 - DAYROOM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

```
----- PROGRAM CONTROL OPTIONS -----
 COOLING ON WEEKEND (1=YES, 0=NO) (ICWK) 1
ROOF HAS VENTED ATTIC (1=YES, 0=NO) (IATIC)
 WEEKEND INTERNAL GAINS FACTOR (WKEND) 1.000000
 LAST CASE FLAG (1=YES, 0=NO) (LSTCS)
 SKY CLEARNESS FACTOR (CLN) 9.700000E-01
NUMBER OF ZONES (NZ) 1
 NUMBER OF ZONES (NZ)
 WEATHER SOURCE ISW=0 WEATHER ON TAPE6, ISW=1
 WEATHER AS SPECIFIED IN TAVE, ECT. (ISW)
 ----- SITE AND BUILDING DATA -----
 *****REAL WEATHER FROM DISK******
 FILE NAME MO
 STATION 13995
                       YEAR 1955
 SITE LATITUDE DEG (AL1) 37.750000
ELEVATION ABOVE SEA LEVEL IN FEET (ELEV) 1158.000000

MEAN AMBIENT TEMP FOR YEAR DEG F (TMAMB) 56.000000

AMPLITUDE OF GROUND TEMP SWING DEG F (AMGRN) 20.000000
SOLAR ABSORBTIVITY OF WALLS (ALPHA) 6.800000E-01
SOLAR ABSORBTIVITY OF ROOF (ALFRF) 3.500000E-01
SOLAR REFLECTANCE OF GROUND (RHOG) 2.000000E-01
 INITIAL TEMPOF AIR IN BUILDING DEG F (TAO) 70.000000
INITIAL TEMPERATURE OF BUILDING MASS (TO) 70.000000
 INITIAL TEMPERATURE OF BUILDING MASS (TO)
INSIDE SUMMER HUMIDITY RATIO LBS/LBS (HRS) 9.000000E-03
INSIDE WINTER HUMIDITY RATIO LBS/LBS (HRW) 0.000000E+00
VOLUME OF ZONE IN CUBIC FEET (VOLHS) 17278.000000
FLOOR AREA (SQFT) 1920.000000
                                                                    77680.000000
HEATING COIL MAX HEATING RATE BTU/HR (QHMAX)
COOLING COIL MAX COOLING RATE BTU/HR (QCMAX) -96225.000000
COND BETWEEN BLDG AIR AND MASS BTU/HR-F (GA) 19200.000000
CONSTANT INFILTRATION RATE CFM (CFMI) 110.000000
INFILTRATION PROFILE
                                                                                       1.00
                                                                                                       .000
                                                                          1.00
                             1.00
                                             1.00
                                                           1.00
               1.00
                                             .000
                                                          .000
                                                                        .000
                                                                                       .000
                                                                                                       .000
                             .000
              .000
  .000
                                                                         1.00
                                                          1.00
                                                                                         1.00
                                                                                                      1.00
                             1.00
                                            1.00
              1.00
  1.00
A FACTOR IN INFILTRATION EQUATION (CINA) 3.820000E-01
B FACTOR IN INFILTRATION EQUATION (CINB)
C FACTOR IN INFILTRATION EQUATION (CINC)
BUILDING THERMAL MASS MCP BTU/F (CMCP)
2.165000E-02
8.330000E-03
4800.000000
BUILDING THERMAL MASS MCP BTU/F (CMCP)
BASEMENT UA FACTOR BTU/HR-F (BSNF) 0.000000E+00
SLAB ON GRADE FACTOR BTU/HR-F (SLBF) 157.000000
PARTITION UA BTU/HR-F (GUA) 0.000000E+00
DOOR UA BTU/HR-F (DUA) 16.380000
WINDOW GLASS NUMBER (NG) 30
DAY TIME WINDOW U BTU/HR-SQFT-F (WNDUO) 6.930472E-01
NIGHT TIME WINDOW U BTU/HR-SQFT-F (WNDUN) 6.930472E-01
WINDOW SHADING FACTOR (SHD) 5.900000E-01
WALL DATA

1 2 3 4

AZIMUTH ANGLE (AZ) -45.00 45.00 135.00 -135.00

WALL AREA SQFT (AWLL) 313.0 539.0 472.0 556.0

WINDOW AREA SQFT (AWND) 60.0 72.0 60.0 .0

WINDOW HEIGHT FT (WNDH) 10.0 10.0 10.0 10.0

WINDOW WIDTH FT (WNDW) 6.0 7.2 6.0 .0

WIDTH OF OVERHANG (WOH) 6.8 2.0 6.8 .0

OVERHANG HGT ABV WNDW(HOH) .0 .0 .0
```

```
MAX SOLAR WITH NO SHADE(SOLMX) 120.0 120.0 120.0 U VALUE BTU/(HR-SQFT-F) (UW) .110 .110 .110
                                                                                  .110
WALL TRANSFER FUNCTIONS
                                        .00471 .00471 .00471 .00471
 CN FACTORS
 NUMBER OF BN FACTORS (NB
                                           5
                                                        5
 BN FACTORS BN (BN)
                                        .00000 .00000 .00000 .00000
.00050 .00050 .00050 .00050
.00243 .00243 .00243 .00243
.00162 .00162 .00162 .00162
.00017 .00017 .00017 .00017
  N=1
  N=2
  N=3
  N=4
                                          6 6 6 6
NUMBER OF DN FACTORS (ND)
  DN FACTORS
                                        1.00000 1.00000 1.00000 1.00000
-1.73771 -1.73771 -1.73771 -1.73771
.90936 .90936 .90936 .90936
-.13373 -.13373 -.13373
.00496 .00496 .00496 .00496
  N=1
  N=2
  N=3
                                          -.13373 -.13373
.00496 .00496
  N=4
                                                                     .00496
                                          -.00001 -.00001 -.00001
ROOF AREA SQFT (AROF) 1920.000000
ROOF U VALUE BTU/HR-SQFT-F (URF) 4.600000E-02
ROOF TRANS FUNCTIONS USED (1=YES, 0=NO) (IROOF)
                                                                            1
ROOF C TRANSFER FUNCTION (CNR) 8.756841E-03
ROOF B TRANSFER FUNCTIONS (BNR)
 .886E-05 .130E-02 .487E-02 .240E-02 .177E-03 885.
ROOF D TRANSFER FUNCTIONS (DNR)
1.00 -1.18 .410 -.444E-01 .500E-03 999.

SKYLIGHT TILT DEGREES (TILT) 0.000000E+00
SKYLIGHT AZIMUTH ANGLE DEGREES (AZSK) 9999.000000
SKYLIGHT HEIGHT FT (SKH) 0.000000E+00
SKYLIGHT WIDTH FT (SKW) 0.000000E+00
SKYLIGHT OVERHANG WIDTH FT (SKOW) 0.000000E+00
OVERHANG HEIGHT ABOVE SKYLIGHT FT (SKOH) 0.000000E+00
SKYLIGHT GLASS NUMBER (NS) 1
SKYLIGHT SHADING COEFFICIENT (SHSK) 0.000000E+00
SUMMER START MONTH AND DAY FOR SHSK (MST,NDST)
SUMMER END MONTH AND DAY FOR SHSK (MND, NDND)
SKY LIGHT AREA SQFT (ASKY) 0.000000E+00

DAYTIME SKY LIGHT U BTU/SQFT-HR-F (SKYU) 1.292998

NIGHT TIME SKYLIGHT U BTU/SQFT-HR-F (SKYUN) 1.292998
                                                                   4.200000E-01
FRACTION OF PROCESS HEAT TO INTERNAL SPACE (FAP)
```

120.0

-----INTERNAL GAINS AND PROFILES -----THERMOSTAT SET POINT DEG F

	KW -		· BTU/HR -			
	207.		PEOPLE	PEOPLE		
	LIGHTS	PROCESS S	ENSIBLE	LATENT	HEATING	COOLING
PEAK VAL	3.	4452.	5400.	4400.		
HOUR	HO	URLY FRACT	CION OF PER			
1	.100	.500	.000	.000	70.0	76.0
2	.100	.500	.000	.000	70.0	76.0
3	.100	.500	.000	.000	70.0	76.0
4	.100	.500	.000	.000	70.0	76.0
5	.100	.500	.000	.000	70.0	76.0
_		.500	.000	.000	70.0	76.0
6	.100		.100	.100	70.0	76.0
7	.600	.500				76.0
8	.600	.500	.100	.100	70.0	
9	.600	.500	.100	.100	70.0	76.0
10	1.000	.700	.200	.200	70.0	76.0
11	1.000	.800	.500	.500	70.0	76.0
12	1.000	.900	1.000	1.000	70.0	76.0

14 1.000 .500 .100 .100 70 15 1.000 .500 .100 .100 70 16 1.000 .700 .200 .200 70 17 1.000 .800 .500 .500 70 18 1.000 .900 1.000 1.000 70 19 1.000 .800 .500 .500 70 20 1.000 .700 .400 .400 70 21 .600 .700 .400 .400 70 22 .100 .500 .000 .000 70 23 .100 .500 .000 .000 70 24 .100 .500 .000 .000 70	.0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0 .0 76.0
NO COOLING BELOW AMBIENT TEMP. OF (TCLKOT) 65.00000	
SYSTEM TYPE, (IECN) 2	
SUPPLY AIR CFM (SACFM) 3490.000000	
ECONOMIZER HIGH TEMP LIMIT F 65.000000 SYSTEM SUPPLY AIR START TIME HR 0.000000E+00	
everth SUPPLY ATR STOP TIME HR 24.000000	
SYSTEM MIXED AIR TEMP(TMXAIR) 70.000000	
MIN OUTSIDE AIR FRACTION OF SACEM (OAFR) 1.00000E-01	
FAN EFFICIENCY (EFAN) 5.500000E-01	
FAN EFFICIENCY (EFAN) 5.500000E-01 FAN TOTAL PRESSURE IN. WATER (DP) 1.600000 HEATING PLANT RATED OUTPUT BTU (HFLOT) 78000.000000	
HEATING PLANT RATED OUTPUT BTO (HFLOI) 78000.000000 HEATING PLANT RATED INPUT BTU (HFLIN) 97500.000000	
HEATING PLANT PART LOAD VS FRAC OF INPUT TABLE (PLH)	
.100 .191 .200 .286 .300 .369	.400 .451
1-2	
.500 .537 .600 .625 .700 .718	.800 .812
900 .906 1.00 1.00	
CULLY ED MADE (TEADOR)	
COOLING PLANT RATED OUTPUT BTU (CFLOT) 96225.000000	
COOLING PLANT RATED OUTPUT BTU (CFLOT) 96225.000000 COOLING PLANT RATED INPUT BTU (CFLIN) 17789.000000	
COOLING PLANT PART LOAD FRAC VS FRAC RATED COP (PLC)	
COORTIG TWWIT TIME TOUR TOUR LESS TO THE TOUR TOUR	
.100 .200 .200 .250 .300 .310	.400 .370
.100 .200 .200 .250 .300 .310 .500 .450 .600 .550 .700 .650	.400 .370 .800 .760

BLDG 1721 - DAYROOM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

ENERGY GAIN/LOSS SUMMARY IN MILLION BTU

			SOLAR THRU		PARTIT DOOF AND				VENT	
			THRU		AND				AND	* * ********
MNTH	LOAD .00		WINDOW	ROOF	SLAB	BSMT	WALL	WINDOV	4 INFL	LATENT
JAN	.00	GAIN	2.72	.00	.00	.00	.00	.00	.00	.00
	-23.05	LOSS		-2.59	-4.59	.00	-4.44	-2.67	-21.38	.00
FEB	.02	GAIN	3.39	.00	.00	.00	.00	.00	.00	.00
		LOSS		-2.15	-3.93	.00	-3.37	-2.30	-18.40	.00
MAD	1.07	GATN	4.40	.01	.00	.00	.10	.00	.00	.12
IMA	1.07 -14.14	LOSS	4.40	-1.95	-3.67	.00	-2.65	-2.14	-17.18	.00
APR		GAIN	4.62	.08	2.12	.00	.49 -1.24	_1 20	-10 14	.00
	-5.69	LOSS		-1.17	-2.19	.00	-1.24	-1.20	-10.14	.00
MAY	11.05	GAIN	5.07	.20	.07	.00	1.04	.04	.22	2.20
		LOSS		71	-1.26	.00	40	71	-5.95	.00
****	22.02	CATN	E 00	35	.20	. 00	1.67	. 12	.69	8.07
JUN	09	GAIN		_ /1	60	.00	08	- 34	-2.40	.00
	09	TO22			00					
.TIIT.	29.12	GATN	5.28	.53	.52	.00	2.29	.31	1.85	10.87
000		LOSS	0.20	29	37		04	21	-1.51	.00
		63 TV	4 67	42	.39	00	1.90	22	1.33	10.84
AUG	27.08		4.6/	.43	42	.00	05	- 23	-1.63	.00
	07	LOSS		32	42					
SEP	15.74	GAIN	3.76	.19	.20	.00	.99	.12	.71	5.94
		LOSS			-1.02		42	59	-4.72	.00
				0.0	0.2	00	22	02	00	1.04
OCT		GAIN	3.17	.03	.03	.00	.22 -1.46	1 20	-0.30	1.04
	-5.24				-2.11					
NOV	1.19	CATN	2.51	.00	.00	.00	.03	.00	.00	.21
		LOSS	2.01	-1.75	-3.01	.00	.03 -2.62	-1.72	-13.24	.00
DEC	.06	GAIN	2.46	.00	.00	.00	-4.46	-2.50	-20.53	.00
	-22.36	LOSS		-2.57	-4.50	.00	-4.46	-2.59	-20.52	.00
тот	117.	GAIN	47.	2.	1.	0.	9.	1.	5.	40.
	-103.	LOSS		-16.	-28.	0.	-21.	-16.	-126.	0.
MAY	HEATING	T.OAD=	-7	7680.	BTUH ON	DEC 18	HOUR 9	AMI	BIENT TE	MP 3.
MAX	COOLING	LOAD=	8 [.]	7377.	BTUH ON	JUL 28	HOUR 17	AMI	BIENT TE	MP 92.
			_	•						

ZONE UA BTU/HR-F 430.5

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-5.I BLDG 1721 - DAYROOM OUTSIDE AIR (DAYTIME)(FT LEONARD WOOD, MO)

									FAN	TOTAL
INTERNA	INTE:	PERAT	SPACE URE F			COIN- CIDENT AMBT.	LIGHTING THOUSAND KWH	PROCESS MILLION BTU	HEAT MILLION BTU	HEAT GAIN MILLION BTU
MONTH	AVG.	MAX	MIN	DAY	пĸ	AMDI.	KWII	DIO	510	
JAN	70.	77.	64.	2 27	13 6		1.13	4.86	3.03	9.88
FEB	71.	77.	69.	17 2	13 6		1.02	4.39	2.73	8.93
MAR	71.	78.	69.	12 4	13		1.13	4.86	3.03	9.88
APR	73.	78.	69.	30 9	12		1.09	4.71	2.93	9.57
MAY	75.	78.	69.	28 11	12		1.13	4.86	3.03	9.88
JUN	76.	78.	70.	22 17	12		1.09	4.71	2.93	9.57
JUL	77.	78.	70.	3 10	12	-	1.13	4.86	3.03	9.88
AUG	77.	78.	70.	19 25	12	_	1.13	4.86	3.03	9.88
SEP	75.	78.	69.	3 15	12		1.09	4.71	2.93	9.57
OCT	73.	78.	69.	5 28	12	-	1.13	4.86	3.03	9.88
NOV	72.	77.	69.	8	12		1.09	4.71	2.93	9.57
DEC	70.	77.	58.	16 18	15	5 56. 5 0.	1.13	4.86	3.03	9.88
YEAR							13.32	57.27	35.63	116.38

BLDG 1721 - DAYROOM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

NUMBER OF HOURS WHEN HEATING OR COOLING IS REQUIRED

		COOLING INCLUDING	NUMBER OF LOADS WE		MAXIMUM BT	
MONTH	HEATING	ECONOMIZER	HEATING	COOLING	HEATING	COOLING
JAN	674	17	14	0 -	7768E+05	.0000
FEB	545	35	0	0 .	7356E+05	.1910E+05
MAR	510	102	0	0 -	7331E+05	.4299E+05
APR	290	230	0	0 .	4580E+05	.4819E+05
MAY	120	382	0	0 .	3121E+05	.5847E+05
JUN	18	503	0	0 -	-8319.	.7878E+05
JUL	3	622	0	0 -	-5739.	.8738E+05
AUG	11	606	0	0 .	1281E+05	.7778E+05
SEP	118	427	0	0 -	2989E+05	.8073E+05
OCT	297	228	0	0 .	4306E+05	.6052E+05
NOV	460	101	0	0 .	6320E+05	.4413E+05
DEC	668	15	12	0 -	7768E+05	.1924E+05
YEAR	3714	3268	26	0 .	7768E+05	.8738E+05

BEACON Energy Analysis By Energy Systems Engineers, Inc. 1721-5.I

SYSTEM TOTALS

		ENERG	Y CONSUMPT		_	OTAL INTERNAL	
	HEATING MILLION	COOLING THOUSAND	LIGHTING THOUSAND	PROCESS MILLION	FANS THOUSAND	HEAT GAIN MILLION	ELECTRIC DEMAND
MONTH		KWH	KWH	BTU	KWH	BTU	KW
JAN	32.25	.00	1.13	4.86	.89	9.88	3.7
FEB	25.26	.00	1.02	4.39	.80	8.93	5.0
MAR	20.88	.06	1.13	4.86	.89	9.88	5.9
APR	9.44	.28	1.09	4.71	.86	9.57	6.1
MAY	2.93	.58	1.13	4.86	.89	9.88	6.7
JUN	.33	1.13	1.09	4.71	.86	9.57	7.8
JUL	.06	1.50	1.13	4.86	.89	9.88	8.4
AUG	.22	1.39	1.13	4.86	.89	9.88	7.8
SEP	3.11	.82	1.09	4.71	.86	9.57	7.9
OCT	9.04	.26	1.13	4.86	.89	9.88	6.8
NOV	17.15	.08	1.09	4.71	.86	9.57	5.9
DEC	31.51	.00	1.13	4.86	.89	9.88	5.0
YEAR	152.17	6.12	13.32	57.27	10.44	116.38	8.4

ENERGY CONSUMPTION PER SQUARE FOOT OF FLOOR 162202. BTU/(SQFT-YEAR)

BLDG 1721 - DAYROOM OUTSIDE AIR (DAYTIME) (FT LEONARD WOOD, MO)

OTHER MONTHLY STATISTICS

	CLEAR DAY SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	ACTUAL SOLAR INSOL. HORIZ. SURF. BTU/ SQFT- DAY	PF FACTOR	AVG. AMBT. DEG. F	MAX SYS' TEMP. I DEG.	RIFT	HOURS SYSTEM NOT COOL	LOADS	MAXIMUM COOLING LOAD BTU	MAXIMUM HEATING LOAD BTU
JAN	1010.	655.	1.000	35.	0.	0.	0	0	.0000	7768E+05
FEB	1421.	901.	1.000	37.	0.	0.	0	0	.1910E+05	7356E+05
MAR	1864.	1216.	1.000	43.	0.	0.	0	0	.4299E+05	7331E+05
APR	2242.	1552.	1.000	55.	0.	0.	0	0	.4819E+05	4580E+05
MAY	2489.	1771.	1.000	65.	0.	0.	0	0	.5847E+05	3121E+05
JUN	2567.	1933.	1.000	72.	0.	0.	0	0	.7878E+05	-8319.
JUL	2470.	1954.	1.000	77.	0.	0.	0	0	.8738E+05	-5739.
AUG	2211.	1784.	1.000	76.	0.	0.	0	0	.7778E+05	1281E+05
SEP	1800.	1330.	1.000	68.	0.	0.	0	0	.8073E+05	2989E+05
OCT	1394.	924.	1.000	57.	0.	0.	0	0	.6052E+05	4306E+05
NOV	1008.	710.	1.000	47.	0.	0.	0	0	.4413E+05	6320E+05
DEC	856.	586.	1.000	35.	0.	0.	0	0	.1924E+05	7768E+05

COMPUTER SIMULATIONS

BUILDING 2100

EMC ENGINEERS, INC

DENVER ● ATLANTA ● GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY: DATE:

AJN 18-Mar-93

BUILDING NO .:

2100

BLDG. TYPE:

RECEPTION CENTER

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	614.7	493.3	278.4	278.4	228.1	382.7
COOLING (kWH)	185529	169028	151021	147506	183308	175188

SUPPLY AIR FAN	68464 CFM
FLOOR AREA	74789 FT ²
CFMI	3831 CFM
UA	11901 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	OCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	700	1700	50 HR	HR. ON HEATING	1300 HR/YR
SAT.			0 HR	HR. ON COOLING	871 HR/YR
SUN.			0 HR	HR. OFF HEATING	3068 HR/YR
0011.	TOTAL OCCU	PY HR.	50 HR/WK	HR. OFF COOLING	2057 HR/YR
	TOTAL UNOC		118 HR/WK		
	ANNUAL OCC		2607 HR/YR		
	ANNUAL UNO	CC. HR.	6153 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

8760 HR/YR 4368 HR/YR 2928 HR/YR

HOUR SAVE (HEATING ONLY) HOUR SAVE (COOLING ONLY)

4368 – 2928 – 1300 = 871 = 3068 HR/YR 2057 HR/YR

HOAUHC	614.7 MBtu -	228.1 MBtu	=	1.64E+01 Btu/CFM-HR
	3831 CFM *	6153 HR/YR		
HOAUH	614.7 MBtu -	228.1 MBtu	=	3.29E+01 Btu/CFM-HR
Ī	3831 CFM *	3068 HR/YR		
COAUHO	185529 kWH -	183308 kWH	=	9.42E-05 kWH/CFM-HR
Ī	3831 CFM *	6153 HR/YR		
COAUC	185529 kWH -	183308 kWH	=	2.82E-04 kWH/CFM-HR
	3831 CFM *	2057 HR/YR		
HOAOHC	614.7 MBtu -	382.7 MBtu	=	2.32E+01 Btu/CFM-HR
	3831 CFM *	2607 HR/YR		3.29E+01 Btu/CFM-HR 9.42E-05 kWH/CFM-HR
HOAOH	614.7 MBtu -	382.7 MBtu	=	4.66E+01 Btu/CFM-HR
	3831 CFM *	1300 HR/YR		
COAOHC	185529 kWH	175188 kWH	=	1.04E-03 kWH/CFM-HR
	3831 CFM *	2607 HR/YR		
COAOC	185529 kWH	175188 kWH	=	3.10E-03 kWH/CFM-HR
	3831 CFM *	871 HR/YR		
DC	1/6 (10 MINUTES PER	R HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

EMC ENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 18-Mar-93

DATE: BUILDING NO.:

2100

BLDG. TYPE:

RECEPTION CENTER

ENERGY CONSTANT CALCULATIONS

ECC	151021 kWH -	147506 kWH	=	5.89E-05 kWH/CFM-HR	
	68464 CFM *	871 HR/YR			
ECHC	151021 kWH -	147506 kWH	=	1.97E-05 kWH/CFM-HR	
	68464 CFM *	2607 HR/YR			
NSUCHO	185529 kWH -	169028 kWH	<u> </u>	3.92E-05 kWH/CFM-HR	į
	68464 CFM *	6153 HR/YR			
NSUCC	185529 kWH -	169028 kWH	_ =	1.17E-04 kWH/CFM-HR	
	68464 CFM *	2057 HR/YR			
DDCCHC	169028 kWH -	151021 kWH		1.01E-04 kWH/CFM-HR	
	68464 CFM *	2607 HR/YR			
DDCCC	169028 kWH -	151021 kWH	=	3.02E-04 kWH/CFM-HR	
	68464 CFM *	871 HR/YR			
NSC		493.3 MBtu	=	1.02E+04 Btu/UA	
	11901	UA			
DSC	493.3 MBtu -	278.4 MBtu	=	1.81E+04 Btu/UA	
	11901	UA			
OPT	(2 HR/DAY X 272 DAY	/YR) – 294	HR/YR		
	(– · ·)	•	=	250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
[,	•	=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	
	·				
L					

DATE: 22-Feb-93 E M C ENGINEERS, INC. **TMB** BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN **CLIENT PROJ. ENG.: DOUG CAGE** 2100BLZ1 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: RECEPTION CENTER BLDG NO: ADMINISTRATION OFFICES - ZONE 1 **BLDG FUNCTION:** # FLOORS 18,716 FLOOR AREA: (SQ. FT) 627 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL **EAST** NORTH SOUTH 8,162 1,862 2,464 1,120 (SQ. FT) 2,716 WALLS, GROSS 625 0 240 182 203 (SQ. FT) GLASS 126 63 21 0 42 (SQ. FT) PERSONNEL DOOR 0 0 0 0 0 (SQ. FT) **INSULATED PANEL** 7.411 1,078 2,161 1,680 (SQ. FT) 2,492 WALLS, NET 18,716 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) (SQ. FT) 126 0 PERSONNEL DOOR (SQ. FT) INSULATED PANEL 0 0 0 0 (SQ. FT) BASEMENT WALLS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.17 0.43 4" FACE BRICK 0.91 AIR SPACE 2" RIGID INSULATION 6.68 4" FACE BRICK 8' L.W. CONC. BLOCK 2.02 5 AIR SPACE 6 2" INSULATION 0.68 7. INSIDE AIR FILM 8"CMU 10.89 TOTAL R-WALL = 0.092 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 SHEET ROOFING SINGLE PLY ROOFING **BATT INSULATION** 30.00 3. 6" BATT INSULATION AIR SPACE 1.00 4. AIR SPACE 1.79 **ACOUSTIC TILE** 5. ACOUSTIC TILE 6. 0.68 INSIDE AIR FILM 33.97 TOTAL R-ROOF = 0.029 U=1/R R-GLASS 1.61 DOUBLE PANE **GLASS TYPE:** 0.83 SLF CONCRETE SLAB TYPE FLOOR: R-BASEM. 0.00 NONE BASEMENT TYPE: 4.20 R-PANEL NONE INSULATED PANEL: R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0.000 0 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 939 0.115 8162 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 24 X CFM /OPENING /HR 1.600 = DOOR OPENINGS / HR - SINGLE DOOR 0 1.385 X CFM /OPENING /HR = DOOR OPENINGS / HR - DOUBLE DOORS 963 TOTAL INFILTRATION (CFM) 0.238 0 X PANEL 'U' = 0 = PANEL AREA **UA PANEL** 49 0.391 X DOOR 'U' 126 = PDOOR AREA **UA PDOOR** 680 0.092 X WALL 'U' 7,411 = WALL AREA **UA WALL** 551 X ROOF 'U' 0.029 = ROOF AREA 18,716 **UA ROOF** 388 X GLASS 'U' 0.621 = = GLASS AREA 625 **UA GLASS** 520 0.830 X SLF = SLAB PERIM. 627 **UA SLAB** 0 0.000 X BASE, "U" = =B-WALL AREA 0 UA BASEM. 996 X A. T. F. 1.035 = INFILTRATION 963 CFM 3,185 TOTAL UA (BTU/HR°F)

EMC ENGINEERS, INC. 22-Feb-93 DATE: TMB BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 2100BLZ2 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 2100 BLDG NAME: RECEPTION CENTER BLDG NO: COMPUTER ROOM - ZONE 2 **BLDG FUNCTION:** # FLOORS 861 FLOOR AREA: (SQ. FT) 62 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST NORTH SOUTH **EAST** 0 294 868 574 (SQ. FT) WALLS, GROSS 120 27 93 0 0 (SQ. FT) **GLASS** 0 0 0 0 0 (SQ. FT) PERSONNEL DOOR 0 0 0 0 0 (SQ. FT) **INSULATED PANEL** 748 0 267 0 481 (SQ. FT) WALLS, NET 861 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 0 0 PERSONNEL DOOR (SQ. FT) INSULATED PANEL 0 0 (SQ. FT) 0 **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) **R-VALUE** COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 3. AIR SPACE 4" FACE BRICK 2" RIGID INSULATION 6.68 AIR SPACE 8" L.W. CONC. BLOCK 2.02 2" INSULATION 6. 8"CMU 0.68 INSIDE AIR FILM 10.89 TOTAL R-WALL = 0.092 U = 1/R**R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 SINGLE PLY ROOFING SHEET ROOFING 30.00 6" BATT INSULATION **BATT INSULATION** 3. 1.00 AIR SPACE 4. AIR SPACE 1.79 ACOUSTIC TILE ACOUSTIC TILE 7. INSIDE AIR FILM 0.68 33.97 TOTAL R-ROOF = 0.029 U=1/R R-GLASS 1.61 DOUBLE PANE **GLASS TYPE:** 0.83 SLF SLAB TYPE FLOOR: CONCRETE 0.00 R-BASEM. NONE **BASEMENT TYPE:** R-PANEL 4.20 INSULATED PANEL: NONE R-PDOOR 2.56 METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 0.000 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 80 868 X CFM / SQ.FT. 0.092 AVG. WALL H/M/L (SQ.FT.) 0.000 0 X CFM / SQ.FT. = LEAKY WALL H/M/L (SQ.FT.) 0 1,600 X CFM /OPENING /HR DOOR OPENINGS / HR - SINGLE DOOR 0 1.385 X CFM /OPENING /HR DOOR OPENINGS / HR - DOUBLE DOORS 80 TOTAL INFILTRATION (CFM) 0 0 X PANEL 'U' 0.238 = PANEL AREA **UA PANEL** 0 0.391 = X DOOR 'U' = PDOOR AREA 0 **UA PDOOR** 69 0.092 X WALL "U" = 748 **UA WALL** = WALL AREA 25 X ROOF "U" 0.029 = 861 = ROOF AREA **UA ROOF** 75 X GLASS 'U' 0.621 = GLASS AREA 120 265 **UA GLASS** 0.830 51 X SLF = SLAB PERIM. 62 **UA SLAB** X BASE. "U" 0.000 0 = =B-WALL AREA 0 UA BASEM. 83 X A. T. F. 1.035 = 80 **CFM** INFILTRATION 303 TOTAL UA (BTU/HR°F)

22-Feb-93 EMCENGINEERS, INC. DATE: TMB BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204.000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN **CLIENT PROJ. ENG.: DOUG CAGE** 2100BLZ3 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 2100 BLDG NAME: RECEPTION CENTER **BLDG NO:** ASSEMBLY HALL - ZONE 3 **BLDG FUNCTION:** # FLOORS 7,667 FLOOR AREA: (SQ. FT) 16 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST SOUTH EAST NORTH 3,510 486 486 1,381 (SQ. FT) 1,157 WALLS, GROSS 728 128 344 85 171 (SQ. FT) **GLASS** 16 0 0 16 0 PERSONNEL DOOR (SQ. FT) 0 0 0 0 0 (SQ. FT) **INSULATED PANEL** 401 358 2,766 1,021 986 (SQ. FT) WALLS, NET 8,081 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 0 PERSONNEL DOOR 16 (SQ. FT) (SQ. FT) INSULATED PANEL 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 2. 4" FACE BRICK 0.91 3. AIR SPACE 2" RIGID INSULATION 4" FACE BRICK 6.68 8" L.W. CONC. BLOCK 2.02 AIR SPACE Z" INSULATION INSIDE AIR FILM 0.68 8"CMU 10.89 TOTAL R-WALL = 0.092 U = 1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** ROOF SHINGLES/FELT 0.28 SINGLE PLY ROOFING 6" BATT INSULATION **BATT INSULATION** 30.00 3. 1.00 AIR SPACE 4 AIR SPACE 1.79 **ACOUSTIC TILE** 5. ACOUSTIC TILE 6. INSIDE AIR FILM 0.68 33.92 TOTAL R-ROOF = 0.029 U=1/R1.61 R-GLASS GLASS TYPE: DOUBLE PANE 0.83 SLF SLAB TYPE FLOOR: CONCRETE 0.00 R-BASEM NONE **BASEMENT TYPE:** 4.20 R-PANEL INSULATED PANEL: NONE R-PDOOR 2.56 PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0 0.000 = X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 404 X CFM / SQ.FT. 0.115 = 3510 AVG. WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) X CFM /OPENING /HR 0 1.600 DOOR OPENINGS / HR - SINGLE DOOR 42 X CFM /OPENING /HR 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 30 445 = TOTAL INFILTRATION (CFM) 0 X PANEL "U" 0.238 0 = PANEL AREA **UA PANEL** 6 X DOOR 'U' 0.391 16 **UA PDOOR** = PDOOR AREA 254 0.092 X WALL 'U' 2,766 **UA WALL** = WALL AREA 238 0.029 X ROOF 'U' = ROOF AREA 8,081 **UA ROOF** 0.621 452 X GLASS 'U' **UA GLASS** = GLASS AREA 728 13 X SLF 0.830 = SLAB PERIM. 16 **UA SLAB** 0 X BASE. 'U' 0 0.000 =B-WALL AREA UA BASEM. 461 X A. T. F. 1.035 **CFM** 445 INFILTRATION = TOTAL UA (BTU/HR°F) 1,425

EMC ENGINEERS. INC. 22-Feb-93 DATE: TMB BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN **CLIENT PROJ. ENG.: DOUG CAGE** 2100BLZ4 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 2100 BLDG NAME: RECEPTION CENTER BLDG NO: **BLDG FUNCTION:** MEDICAL CLINIC - ZONE 4 # FLOORS 14,142 FLOOR AREA: (SQ. FT) SLAB PERIMETER: (FT) 219 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST SOUTH EAST .NORTH 5,706 990 910 3,698 (SQ. FT) 108 WALLS, GROSS 750 128 128 494 Ω (SQ. FT) **GLASS** 21 0 0 0 21 PERSONNEL DOOR (SQ. FT) 0 0 0 0 0 (SQ. FT) INSULATED PANEL 4,935 3,183 862 782 108 (SQ. FT) WALLS, NET 14,187 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 21 (SQ. FT) 0 PERSONNEL DOOR INSULATED PANEL (SQ. FT) 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 3. AIR SPACE 4" FACE BRICK 6.68 2" RIGID INSULATION 4. 2.02 AIR SPACE 8" L.W. CONC. BLOCK 2" INSULATION 8"CMU INSIDE AIR FILM 0.68 TOTAL R-WALL = 10.89 0.092 U=1/R**R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 SHEET ROOFING SINGLE PLY ROOFING BATT INSULATION 30.00 6" BATT INSULATION 3. 1.00 AIR SPACE 4. AIR SPACE 1.79 **ACOUSTIC TILE** 5. ACOUSTIC TILE 0.68 INSIDE AIR FILM TOTAL R-ROOF = 33.97 0.029 U=1/R1.61 **R-GLASS** DOUBLE PANE **GLASS TYPE:** 0.83 SLF CONCRETE SLAB TYPE FLOOR: R-BASEM 0.00 BASEMENT TYPE: NONE 4.20 R-PANEL INSULATED PANEL NONE 2.56 R-PDOOR METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 0.000 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 656 X CFM / SQ.FT. 0.115AVG. WALL H/M/L (SQ.FT.) 5706 0 0.000 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 8 X CFM / OPENING / HR 1.600 = DOOR OPENINGS / HR - SINGLE DOOR 0 1.385 X CFM /OPENING /HR = DOOR OPENINGS / HR - DOUBLE DOORS 664 TOTAL INFILTRATION (CFM) = 0 0.238 X PANEL 'U' -0 = PANEL AREA **UA PANEL** 8 0.391 X DOOR 'U' ≖ 21 = PDOOR AREA **UA PDOOR** 0.092 453 X WALL 'U' === 4,935 = WALL AREA **UA WALL** 418 X ROOF 'U' 0.029 * 14,187 **UA ROOF** = ROOF AREA 466 X GLASS 'U' 0.621 = GLASS AREA 750 **UA GLASS** 182 0.830 X SLF **UA SLAB** = SLAB PERIM. 219 0 X BASE. "U" 0.000 225 =B-WALL AREA 0 UA BASEM. 687 1.035 664 X A. T. F. = CFM INFILTRATION 2,214 TOTAL UA (BTU/HR°F)

	NGINEER	S INC					DATE:	22-Feb-93
		XPANSION FEASI	OILITY CTII	DV			3Y:	TMB
	•			UT		-	JOB:	3204.000
		ACA 41-92-C-0	098			-		
CLIENT PRO	J. ENG.: DOUG	3 CAGE				_	CHK:	AJN
LOCATION:	FT LEONARD \	WOOD				<u>!</u>	FILE:	2100BLZ5
	BUILI	DING HEATING	G LOAD	CALCUL	ATION S	HEET		
BLDG NO:		BLDG NAME: R						
BLDG FUNCTI	ION:	CLOTHING ISSU	E – ZONE 5					
FLOOR AREA:	: (SQ. FT)	12,680				1	# FLOORS _	1
SLAB PERIME	TER: (FT)	199						
LARFAS: ([1 FIELD VERIFIE	D ELEVATION PLAN	NS)			_		
11.711.C.10. ([, , , , , , , , , , , , , , , , , , , ,		NORTH	SOUTH	EAST	WEST	TOTAL	
WALLS, GROS	SS	(SQ. FT)	3,045	0	969	1,428	5,442	
GLASS		(SQ. FT)	0	0	0	0	0	
PERSONNEL	DOOR	(SQ. FT)	21	0	0	0	21	
OVERHEAD D	OOR	(SQ. FT)	144	0	0	0	144	
WALLS, NET		(SQ. FT)	2,880	0	969	1,428	5,277	
		EA IF ATTIC IS UNC	ONDITIONE	:U)	. DOOD	(SQ. FT)	12,680 21	
OVERHEAD D		(SQ. FT)		PERSONNE		(SQ. FT)	0	
BASEMENT W		(SQ. FT)	0	0	0	U	<u> </u>	
II. CONSTRUC	CTION: ([] FIE	LD VERIFIED WALL,	ROOF, WIN	IDOW, DOOF	TYPES)		TO 1	D MALLE
WALLS: (SKE	TCH CROSS SE	CTION OF WALL)				COMPONEN		R-VALUE
						OUTSIDE A		0.17 0.43
	N					AIR SPACE	ICK	0.43
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	A 4"	FACE BP	ICK		2' RIGID IN	MOLTALLIS	6.68
		1 1 1 1 1 1	RSPACE			8" L.W. CON		2.02
ĺ	1		INSULAT		5. 6.	8 L.W. COI	VO. BLOOK	2.02
	1 A 5			1010	7.	INSIDE AIR	FII M	0,68
	-:^	€1727 8.	"CMU		7.	TOTAL R-		10.89
		V U					U=1/R	0.092
BOOK YOU'S	TOUL OFFICE CE	CTION OF ROOF)				COMPONEN	ITS	R-VALUE
HOUP: (SKE	ICH CHOSS SE	CHOIL OF HOOL)				OUTSIDE A		0.17
1			- SINGLE	E PIY ROOF	ING 2.	SHEET RO	OFING	0.34
	ZYDYYV.	Z Z Z Z Z Z		IT INSULAT		BATT INSU	LATION	30.00
1 (/()()()()()()()()	\)()()()()()		PACE	4.	AIR SPACE		1.00
JUC 700	000000	10000g	/-AIR >	117CE	5.	ACOUSTIC	TILE	1.79
4		4/	- ACOU.	STIC TILE	• • • • • • • • • • • • • • • • • • • •			
] [•				7.	INSIDE AIR		0.68
ļ						TOTAL R-		33.97
1		•					U=1/R	0.029
							D 01 100	1.61
GLASS TYPE	;	DOUBLE PANE					R-GLASS	
SLAB TYPE F		CONCRETE					SLF R-BASEM	0.83
BASEMENT T		NONE					R-ODOOF	
OVERHEAD [METAL					R-PDOOR	
	DOOR TYPE:	METAL					, , 5001	
III. INFILTRAT				V 0511 / 0	O ET	0.000		0
	H/M/L (SQ.FT.)			X CFM / SC		0.000		626
		1.1	5442	X CFM / SC		0.115	= =	020
AVG. WALL H	ł/M/L (SQ.FT.)	<u> </u>		V 0-11				
AVG. WALL H	H/M/L (SQ.FT.)			X CFM / SC		0.000		
AVG. WALL H LEAKY WALL DOOR OPEN	. H/M/L (SQ.FT.) IINGS / HR — SII	NGLE DOOR	5	X CFM /OF	PENING /HR	1.600	=	8
AVG. WALL H LEAKY WALL DOOR OPEN	H/M/L (SQ.FT.)	NGLE DOOR	5 20	X CFM /OF X CFM /OF	PENING /HP	1.600 1.385	=	8 28
AVG. WALL H LEAKY WALL DOOR OPEN	. H/M/L (SQ.FT.) IINGS / HR — SII	NGLE DOOR		X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR ILTRATION (1.600 1.385 (CFM)	= =	8 28 662
AVG. WALL H LEAKY WALL DOOR OPEN	. H/M/L (SQ.FT.) IINGS / HR — SII	NGLE DOOR		X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR "U"	1.600 1.385 (CFM) 0.952	= =	8 28 662 137
AVG. WALL H LEAKY WALL DOOR OPEN	. H/M/L (SQ.FT.) IINGS / HR — SII IINGS / HR — DO	NGLE DOOR DUBLE DOORS	20	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR 'U' X DOOR 'U'	1.600 1.385 (CFM) 0.952 0.391	= = =	8 28 662 137 8
AVG. WALL H LEAKY WALL DOOR OPEN	. H/M/L (SQ.FT.) INGS / HR - SII INGS / HR - DO	NGLE DOOR DUBLE DOORS =ODOOR AREA	20 144	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR 'U' X DOOR 'U' X WALL 'U'	1.600 1.385 (CFM) 0.952 0.391 0.092	= = = = = = = = = = = = = = = = = = = =	8 28 662 137 8 484
AVG. WALL H LEAKY WALL DOOR OPEN	H/M/L (SQ.FT.) INGS / HR - SII INGS / HR - DO UA ODOOR UA PDOOR	NGLE DOOR DUBLE DOORS = ODOOR AREA = PDOOR AREA	20 144 21	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR PENING /HR PENING /HR PENING /U X DOOR 'U' X WALL 'U' X ROOF 'U'	1.600 1.385 (CFM) 0.952 0.391 0.092	= = = = = = = = = = = = = = = = = = = =	8 28 662 137 8 484 373
AVG. WALL H LEAKY WALL DOOR OPEN	H/M/L (SQ.FT.) INGS / HR - SII INGS / HR - DO UA ODOOR UA PDOOR UA WALL	NGLE DOOR DUBLE DOORS = ODOOR AREA = PDOOR AREA = WALL AREA	144 21 5,133	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR 'U' X DOOR 'U' X WALL 'U'	1.600 1.385 (CFM) 0.952 0.391 0.092 0.029	= = = = = = = = = = = = = = = = = = =	8 28 662 137 8 484 373
AVG. WALL H LEAKY WALL DOOR OPEN	H/M/L (SQ.FT.) INGS / HR - SII INGS / HR - DO UA ODOOR UA PDOOR UA WALL UA ROOF	NGLE DOOR DUBLE DOORS = ODOOR AREA = PDOOR AREA = WALL AREA = ROOF AREA	144 21 5,133 12,680	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR 'U' X DOOR 'U' X WALL 'U' X ROOF 'U' X GLASS 'L X SLF	1.600 1.385 (CFM) 0.952 0.391 0.092 0.029 J* 0.621 0.830		8 26 662 137 8 484 373 0
AVG. WALL H LEAKY WALL DOOR OPEN	H/M/L (SQ.FT.) INGS / HR - SII INGS / HR - DO UA ODOOR UA PDOOR UA WALL UA ROOF UA GLASS	NGLE DOOR DUBLE DOORS = ODOOR AREA = PDOOR AREA = WALL AREA = ROOF AREA = GLASS AREA	144 21 5,133 12,680	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR 'U' X DOOR 'U' X WALL 'U' X ROOF 'U' X GLASS 'L X SLF X BASE 'U'	1.600 1.385 (CFM) - 0.952 - 0.391 0.092 - 0.029 J* 0.621 0.830		8 26 662 137 8 484 373 0 165
AVG. WALL H LEAKY WALL DOOR OPEN	H/M/L (SQ.FT.) INGS / HR - SII INGS / HR - DO UA ODOOR UA PDOOR UA WALL UA ROOF UA GLASS UA SLAB	NGLE DOOR DUBLE DOORS = ODOOR AREA = PDOOR AREA = WALL AREA = ROOF AREA = GLASS AREA = SLAB PERIM. = B-WALL AREA	144 21 5,133 12,680 0	X CFM /OF X CFM /OF TOTAL INFI	PENING /HR PENING /HR LTRATION (X DOOR 'U' X DOOR 'U' X WALL 'U' X ROOF 'U' X GLASS 'L X SLF	1.600 1.385 (CFM) 0.952 0.391 0.092 0.029 J* 0.621 0.830		8 26 662 137 8 484 373 0

EMCENGINEERS, INC. DATE: 22-Feb-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: TMB JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE LOCATION: FT LEONARD WOOD FILE: 2100BLZ6 **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: RECEPTION CENTER BLDG NO: OFFICES AND RETAIL STORE - ZONE 6 **BLDG FUNCTION:** # FLOORS FLOOR AREA: (SQ. FT) 13,222 SLAB PERIMETER: (FT) 132 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL EAST WEST NORTH SOUTH 728 0 2,226 0 WALLS, GROSS (SQ. FT) 1,498 53 0 0 0 53 (SQ. FT) GLASS 0 42 0 84 42 PERSONNEL DOOR (SQ. FT) 0 0 0 (SQ. FT) 0 0 OVERHEAD DOOR 2.089 0 686 1,403 0 (SQ. FT) WALLS, NET 9,887 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 84 0 PERSONNEL DOOR (SQ. FT) (SQ. FT) OVERHEAD DOOR 0 0 0 0 0 (SQ. FT) **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.17 4" FACE BRICK 0.43 2. 0.91 3. AIR SPACE "FACE BRICK 6.68 2º RIGID INSULATION 4. AIR SPACE 2.02 8" L.W. CONC. BLOCK 5. 2" INSULATION 8"CMU INSIDE AIR FILM 0.68 10.89 TOTAL R-WALL = 0.092 U=1/R**R-VALUE** COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) **OUTSIDE AIR FILM** 0.17 0.34 SINGLE PLY ROOFING SHEET ROOFING **BATT INSULATION** 30.00 6" BATT INSULATION 3. 4. AIR SPACE 1.00 AIR SPACE 1.79 **ACOUSTIC TILE** 5. ACOUSTIC TILE 6 INSIDE AIR FILM 0.68 TOTAL R-ROOF = 33.97 0.029 U=1/R**R-GLASS** 1.61 GLASS TYPE: DOUBLE PANE 0.83 SLF SLAB TYPE FLOOR: CONCRETE 0.00 **R-BASEM BASEMENT TYPE:** NONE 1.05 R-ODOOR OVERHEAD DOOR NONE R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0 0.000 X CFM / SQ.FT. = TIGHT WALL H/M/L (SQ.FT.) 256 0.115 AVG. WALL H/M/L (SQ.FT.) 2226 X CFM / SQ.FT. = 0 X CFM / SQ.FT. 0.000 LEAKY WALL H/M/L (SQ.FT.) 10 X CFM /OPENING /HR 1.600 = DOOR OPENINGS / HR - SINGLE DOOR 11 DOOR OPENINGS / HR - DOUBLE DOORS 1.385 X CFM /OPENING /HR = 277 TOTAL INFILTRATION (CFM) = 0.952 0 X DOOR 'U' **UA ODOOR** = ODOOR AREA 0 = 0.391 33 = X DOOR 'U' **UA PDOOR** = PDOOR AREA 84 X WALL 'U' 192 0.092 = 2,089 WALL AREA **UA WALL** X ROOF 'U' 0.029 291 **ROOF AREA** 9,887 **UA ROOF** 33 0.621 = GLASS AREA 53 X GLASS "U" = **UA GLASS** 110 0.830 **UA SLAB** = SLAB PERIM 132 X SLF = X BASE. "U" 0 0.000 UA BASEM. =B-WALL AREA 0 X A. T. F. 1.035 286 277 INFILTRATION CFM 944 TOTAL UA (BTU/HR°F)

EMCENGINEERS. INC. DATE: 22-Feb-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY TMB BY: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 JOB: CHK: AJN **CLIENT PROJ. ENG.: DOUG CAGE** 2100BLZ7 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 2100 BLDG NAME: RECEPTION CENTER BLDG NO: CHAPEL / AUDITORIUM - ZONE 7 **BLDG FUNCTION:** # FLOORS FLOOR AREA: (SQ. FT) 7,501 232 **SLAB PERIMETER: (FT)** I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) EAST WEST TOTAL · NORTH SOUTH 1,428 1.596 6,222 1,632 WALLS, GROSS (SQ. FT) 1,566 349 0 0 349 0 (SQ. FT) **GLASS** 0 21 21 94 52 PERSONNEL DOOR (SQ. FT) 0 0 0 0 0 **INSULATED PANEL** (SQ. FT) 1,575 5,779 1,165 1,407 1,632 (SQ. FT) WALLS, NET ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 7,963 94 0 PERSONNEL DOOR (SQ. FT) (SQ. FT) **INSULATED PANEL** 0 n (SQ. FT) 0 0 **BASEMENT WALLS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) COMPONENTS **R-VALUE** WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.17 0.43 4' FACE BRICK 3. AIR SPACE 0.91 "FACE BRICK 4. 2' RIGID INSULATION 6.68 AIR SPACE 5. 8' L.W. CONC. BLOCK 2.02 2" INSULATION 8"CMU INSIDE AIR FILM 0.68 TOTAL R-WALL = 10.89 0.092 U=1/RCOMPONENTS R-VALUE ROOF: (SKETCH CROSS SECTION OF ROOF) **OUTSIDE AIR FILM** 0.17 SINGLE PLY ROOFING SHEET ROOFING 0.34 2. 6" BATT INSULATION 30.00 BATT INSULATION 1.00 4. AIR SPACE AIR SPACE **ACOUSTIC TILE** 1.79 5. ACOUSTIC TILE 6. INSIDE AIR FILM 0.68 TOTAL R-ROOF = 33.97 0.029 U=1/R R-GLASS 1.61 DOUBLE PANE **GLASS TYPE:** 0.83 SLF CONCRETE SLAB TYPE FLOOR: R-BASEM 0.00 NONE **BASEMENT TYPE:** 4.20 **R-PANEL** INSULATED PANEL: NONE R-PDOOR 2.56 **METAL** PERSONNEL DOOR TYPE: III. INFILTRATION: n 0.000 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 716 X CFM / SQ.FT. 0.115 = М AVG. WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. = LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR X CFM /OPENING /HR 1.385 25 DOOR OPENINGS / HR - DOUBLE DOORS 18 740 TOTAL INFILTRATION (CFM) 0 X PANEL 'U' 0.238 0 **UA PANEL** = PANEL AREA 37 X DOOR 'U' 0.391 = PDOOR AREA 94 **UA PDOOR** 531 X WALL 'U' 0.092 5,779 = WALL AREA **UA WALL** X ROOF 'U' 0.029 234 = ROOF AREA 7,963 **UA ROOF** 217 X GLASS 'U' 0.621 = GLASS AREA 349 **UA GLASS** 193 0.830 = SLAB PERIM. 232 X SLF = UA SLAB X BASE. "U" 0 0.000 UA BASEM. =B-WALL AREA 0 766 1.035 X A. T. F. 740 INFILTRATION CFM 1,977 TOTAL UA (BTU/HR°F)

3204-000 EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

23 – Feb – 93 TMB CEL 2100 Z1

}				_	BLDG:	2100	ZONE	-
			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activity		Typical	Sensible	Latent	TOT Sen. TOT. Lad	TOT. Lad
Š	People	Туре	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
	112	4	Seated, light work, typing	Offices, hotels, apts	250	200	200 28,000 22,400	22,400
TOTAL	112					TOTAL	28,000	28,000 22,400

			Peak Wattage Value for Lights		
Zone	No. of	Fixture			
ģ	Fixtures Type	Type	Description	Watts/Fixture	Total Wattage
	187	7	Fluorescent, 3 - 34w lamps, 16w ballast (2x4 ft. fixture)	118	22,066
	16	မှ	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	1,344
	17	5	Fluorescent, 1 34w lamp, 16w ballast (1x4 ft. fixture)	05	820
	3	ଷ	Incandescent - 100w	100	300
TOTAL	223			TOTAL	24,560

			Peak Value for Internal Gains				
Zone.	No of	Fauin			Heat Gain		Total
2	Fauiomen	1 1	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
	09		Microcomputer	350	91%	21,000	71,673
	45		5 Printer (laser)	870	34%	39,150	133,619
	-		Copy Machine	1,570	20%	1,570	5,358
	28		12 Typewriter	100	40%	2,800	9,556
~	7		Radio	71	10%	497	1,696
	N		Coffee Brewer	1,658	100%	3,316	11,318
	0		Vending Machine	2007	36%	1,400	4,778
	6	L	Refrigerator (Frostless 12 cu. ft.)	321	32%	963	3,287
	N		Microwave Oven	009	%59	1,200	4,096
				TOTAL	53%	71,896	245,381

3204 – 000 23 – Feb – 93 TMB CEL 210021

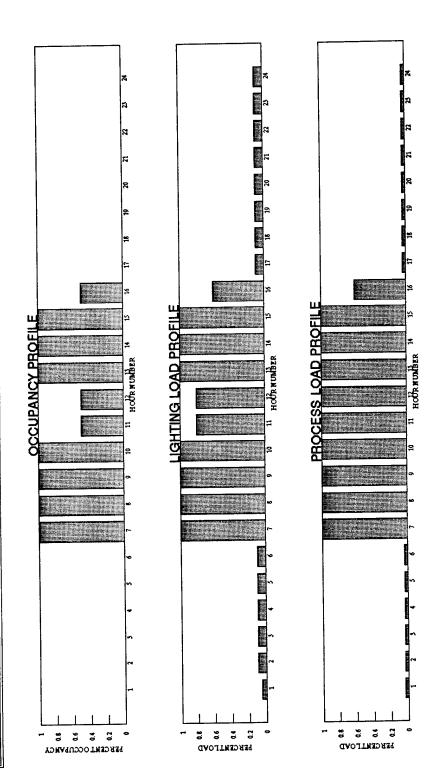
DATE: PREPARED BY: CHECKED BY:

EMC NO.:

2100

FILE: BLDG: ZONE:

																								Γ
SO IS	R DG	TYPE OF										ᅙ	HOUR NUMBER	MBEF										
	CHINCTION	3 13 Caa	F	6	6	4	5	_	8	6	9	11	12	13	14	15	16 17	7 18	Ш	20	19 20 21 22 23 24	ผ	ន	24
בינו	NO CALCA	11 20		3	1					ļ				1	-	ľ							ŀ	
6	Actinistration	OCC IDANCY		-	_	_	_	_	_	_	_	0.55	0.5	_	-	-	0.5	4	_			1	1	Ī
ר	To the second se	ONIE TOTAL	7	1	1 1	-	101	-	-	F	-	0.8	9.0	-	-	1	0 9	1.0	-	<u>.</u>		0.1	0.1	0.1
			-		:	; :		1	1	-	-	•	,	ţ	ļ.	,	3	2	200	2	ACCIDIO ACCIDI	707	7	200
		PROCESS	000	0.0 0.04 0.0	20.04	<u>8</u> 0	0.04 0.04	_	_	_	_	-	-	-	-		0.	2	5	5	5	<u> </u>	<u> </u>	[]
														-										



3204-000 EMC NO.:

23-Feb-93 Date: Prepared BY: Checked BY: File: Bldg:

TMB CEL 210022 2100

; } }		: : : :			BLDG:	2100	ZONE	N
			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of Activity	Activity		Typical	Sensible		TOT Sen. TOT. Lat	TOT. Lad
Š	People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
2	9	4	Seated, light work, typing	Offices, hotels, apts	520	500	1,500	1200
TOTAL	9					TOTAL	1,500	1200

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			
Š	Fixtures	Туре	Description	Watts/Fixture	Total Wattage
2	14	7	Fluorescent, 3 - 34w lamps, 16w ballast (2x4 ft. fixture)	118	1,652
TOTAL	14			TOTAL	1,652

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		Total
ž	Equipmen Type	Type	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
2	4	3	Microcomputer	350	91%	1,400	4,778
	4	150	Printer (laser)	870	34%	3,480	11,877
in expanse	-	9	Š	1,570	20%	1,570	5,358
	က	L	Disk Drives/Mass Storage	5,500	%69	16,500	56,315
	-	45		250	%09	250	853

-				TOTAL	A294	23 200	79.182

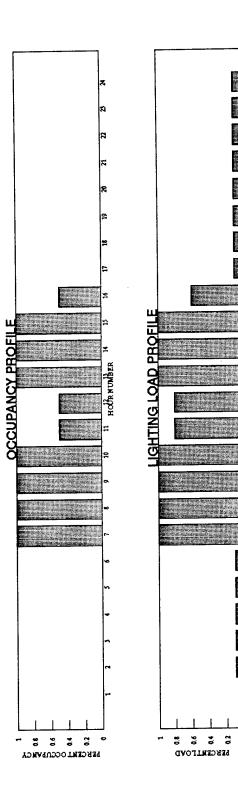
EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE:

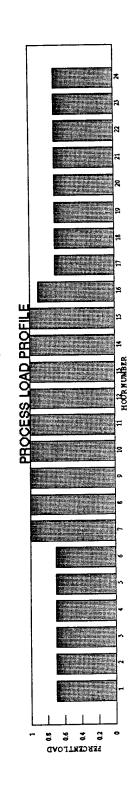
3204 – 000 23 – Feb – 93 TMB CEL 210022

BLDG:	ZONE:

2100 2

BI DG	BLDG	TYPE OF										로	HOUR NU	JMB	JMBER									ŀ
TVPE	ū	PROFILE	-	2	6	4	5	9	L	3	01	=	12	13	14	15	16	17	18	19	ଯ	21 2	22 23	23 24
		70,440		╬	╬	-	1	L		-	Ţ	C	2	-	-	-	20		-	-	\vdash	_	_	_
	Administration	CCCPANCE					-	-	-	-	-	3	3	1	•		3	1	1	ľ	 ;	1	,	,
		CNITHOL	0 1	0 1 (11 (0 1 0	-	_	_	_	_	0.8	0.8	_	-	_	9.0	0	<u>-</u>	<u>.</u>	0.1	0.1.0	0) -
						<u>'</u>		1	1	-				ľ	ľ	ľ	3	1	1	10	1	7	-	7
		PROCESS	0.7	70	2.7	2	7	_	_	_	-	_	_		_	_	S	2	5	3	1	2	2	?
		2000																					l	





HOUR NUMBER

23-Feb-93 3204 -- 000 EMC NO.: DATE:

AMB. 딤

PREPARED BY: CHECKED BY:

ო

ZONE

2100Z3 2100

FILE: BLDG:

TOT Sen. TOT. Lat (BTU/H) 18,375 18,375 Latent (BTU/H) TOTAL (BTU/H) Rates of Heat Gain from Occupants of Conditioned Spaces Sensible Application Offices, hotels, apts Typical Degree of Activity

2 Seated very light work (writing) Activity 75 No. of People TOTAL Zone

11,625

(BTU/H)

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			
Š	No. Fixtures Type	Type	Description	Watts/Fixture Total Wattage	Total Wattage
က	32	21	21 Incandescent - 150w	150	4,800
	9		5 Fluorescent, 1 - 34w lamp, 16w ballast (1x4 ft. fixture)	50	3,000
TOTAL	35			TOTAL	7,800

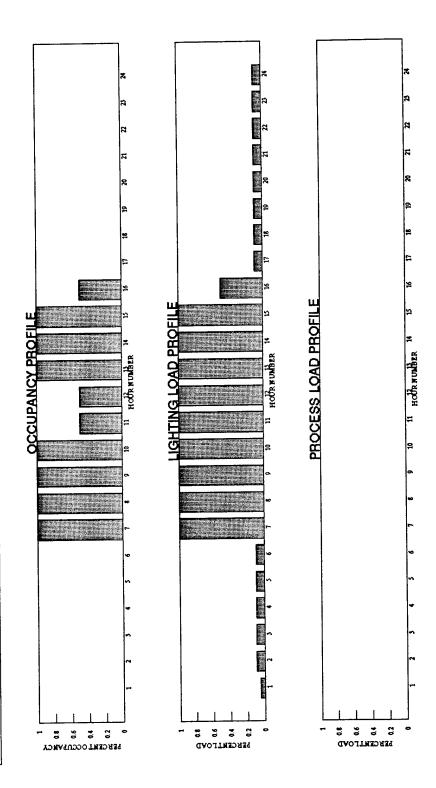
		Peak Value for Internal Gains				
No. of	Zone No. of Equip.		Acceptant Mothers	Heat Gain	Total Wettern	Total (RTI)
Janpmer	ed A	Description	Average wanage to Space A	la Space of	I O I O I O I O I O I O I O I O I O I O	212
			TOTAL	003		

3204 -- 000 23 -- Feb -- 93 DATE: PREPARED BY: CHECKED BY: EMC NO.:

TMB CEL 2100Z3

FILE: BLDG: ZONE:

																									_
20.00	20	TYPE OF										Ĭ	SER	HOUR NUMBER	E										
	NOT ON	3113000	-	0	۳.	4	5	9	-	8	6	10	111	12 13	13 14	L	15 16 17	17	∞	19 20 21	ଛ	21	22	23 24	2
		1 2 2		1	7	1	,															ŀ	L	-	٢
c	Achinistration	CCCI IDANCY		ļ					-	-	-	-	ιζ O	ıŭ -	_	_	0.55				1	+		+	٦
,	Total all all all all all all all all all	2000		1		1	1	1	1		1		ļ			'	4	,	•	100		•	-		Č
		LIGHTING	0.	0.7	0.1	-	<u>-</u>		-	_	_	-	-	_			0,0	-	-	;			;		Ţ
		ODJUCEOU O		Ī		Γ	-	\mid	-						_				_					_	
		PHOLESS		1				1			$\left\ \cdot \right\ $		$\ $												



BML 3204-000 23-Feb-93 Date: Prepared by: Checked by: File: Bldg: EMC NO.:

CEL 2100Z4 2100

ZONE

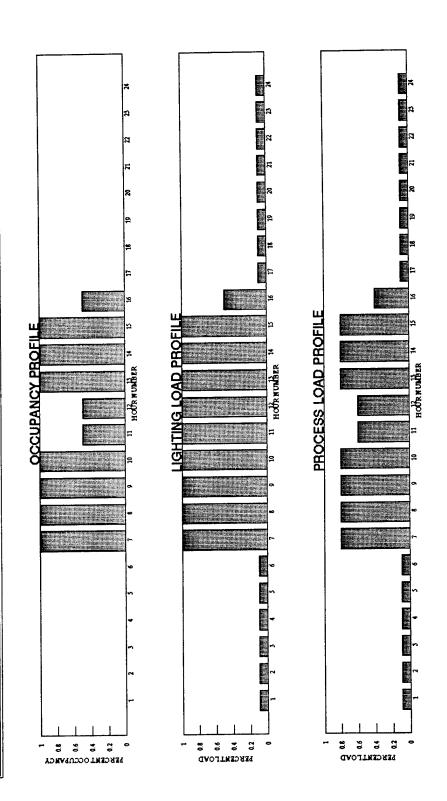
			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activity		Typical	Sensible	1	TOT Sen. TOT. Lad	TOT. Lat
Š.	People	Туре	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
4	52	5	Standing, light work, or walking slowly	Retail store, bank	270	220	220 11,000	11,000
TOTAL	20					TOTAL	13,500	13,500 11,000

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			
Š	Foctures	Туре	Description	Watts/Fixture	Total Wattage
4	96	7	Fluorescent, 3 - 34w lamps, 16w ballast (2x4 ft. fixture)	118	11,328
	12		21 Incandescent - 150w	150	1,800
	2	3	5 Fluorescent, 1 - 34w lamp, 16w ballast (1x4 ft. fixture)	20	3,200
	9	ශි	60 Exit Light	02	120
TOTAL	178			TOTAL	16,448

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		Total
Š	Щ	Type	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
4	7	1	Microcomputer	320	91%	2,450	8,362
	4	5	Printer (laser)	870	34%	3,480	11,877
	-	45	45 Micro Fiche Machine	250	%09	250	853
	2		49 Radio	71	401	142	485
	8		54 Refrigerator (Frostless 12 cu. ft.)	321	35%	2,568	8,765
	2		62 Television (Color, tube)	300	15%	900	2,048
	က		Typewriter	91	10%	300	1,024
	ଷ		Optical Machine	120	10%	2,400	8,191
			X-ray Machine	460	10%	3,220	10,990
	=		Shot Machine	120	10%	1,320	4,505
	2		Hand Dryer	1,200	100%	2,400	8,191
<u> </u>							
				TOTAL	40%	19,130	65,291

BLDG TYPE

gineers, Inc. EAP, EMCS EXPAR RACT NO.: DACA ENG: DOUG CA(gineers, Inc. EAP, EMCS EXPANSION FEASIBILITY STUDY RACT NO.: DACA 41—92—C—0098 ENG: DOUG CAGE	ASIBIL)-009	\$` } 2 8	STUE	≿															EMC N DATE: PREPA CHECI	EMC NO.: DATE: PREPARED BY: CHECKED BY:	:: G:G:	.,	3204 – 000 23 – Feb – 93 TMB CEL	
T. LEONARD WOOD	MOOM																			B	BLDG:		-	2100	
																				2	ا ني			4	
BLDG	TYPE OF										로	HOUR NUMBER	MBE	Œ						i					
FUNCTION		1 2 3	2	3	4	2	9	7	8	9 10	Ε	12	12 13 14	4	15	15 16 17	17	18	19	19 20 21 22 23	1 22	23	24		
Achinistration	Administration OCCUPANCY		╟				_	-	-	-	0.5	0.5	-	F	F	0.5	Н	Н	H	$ \cdot $					
	LIGHTING	0.1 0.1 0.1	0.1	0.1	0.1	0.1 0.1 0.1	-	-	_	-	-	-	-	-	-	0.5	0.1	5.1	-	0.5 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.1	0	<u>-</u>		
	PROCESS 01 01 01 01 01 01 01 01 08 08 08 08 06 06 08 08 08 04 01 01 01 01 01 01 01 01	0	0.1	0.1	0	0.1	0	0	8 08	0.8	90	90	0.8	9.0	8.0	0.4	5.1	5.1	0.1	o 	0.1	0.7	0		



3204 -- 000 23 -- Feb-- 93 EMC NO.: DATE:

				ZONE
20100	TMB	GEL	210025	2100
֝֞֝֝֞֝֝֞֝֝֝֓֞֝֝֓֓֓֓֞֝֞֝֓֓֓֓֞֝֞֝֓֡֓֓֓֓֞֝֞֡֓֡֓	PREPARED BY:	CHECKED BY:	FIE	BLDG:

			Rates of Heat Gain from Occupants of Conditioned Spaces	sof Conditione	dSpaces			
Zone	No. of	Activity		Typical	Sensible	Latent	TOT Sen. TOT. Lat	TOT. Lad
2	People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
5	9	5	Standing, light work, or walking slowly	Retail store, bank	270	220	1,620	1,320
TOTAL	9					TOTAL	1,620	1,320

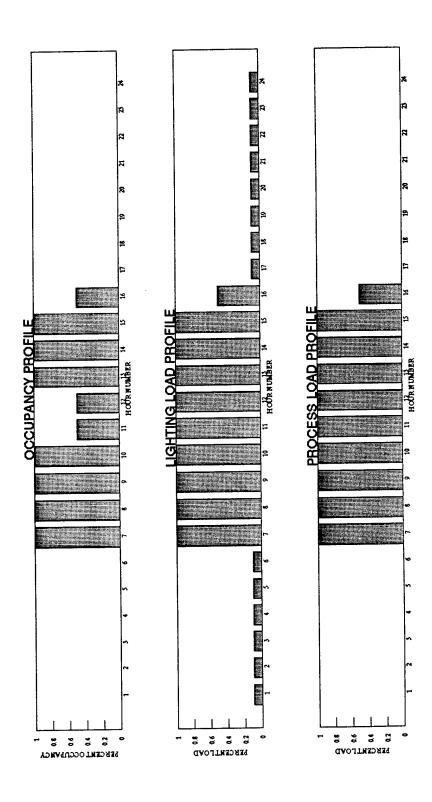
			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Focture			
è	Fixtures Type	Туре	Description	Watts/Fixture Total Wattage	Total Wattage
5	99	21	21 Incandescent – 150w	150	006'6
TOTAL	98			TOTAL	006'6

			Peak Value for Internal Gains				
Zone	Zone No. of Equip.	Equip.			Heat Gain		
è N	Equipmen	Туре	Description	Average Wattage	to Space (%)	lotal Watt	
5	-	49	Radio	17	%01	71	242
	-	31	11 Fan (Circulating)	88	%02	88	300
~~~							
ģr.mag				TOTAL	16%	159	543

3204 -- 000 23 -- Feb -- 93 TMB Date: Prepared By: Checked By: File: Bldg: Zone: EMC NO.:

210025

2	RI DG	TYPE OF										오	<b>SAN</b>	<b>HOUR NUMBER</b>	Ë									
	DE LA CALLONIA		F	C	6	A	4	ď	7	α	6	1	12	13	14	14 15	16	17	17 18 19 20 21	19	ଯ	21	ผ	23 24
וועב		בובטבו	-	3	,	•	>		$\  \cdot \ $	,				71							1	-	┞	-
۲	Achinistration	OCC! IPANCY					-	_	-	-	_	ò	5 0.5		_	_	0,55						-	$\dashv$
•		- ICHTING	0	0 1 0 1	0.1	0.1	0.1	0.1	-	-	-	-	-	-	_		0.5	0.1	0.1	0.1	0.1	_	0.1	1.1
			:				1	-	-	-	-	ŀ	-	-	-		0.5	L			H		-	
		המשלאלו						$\parallel$	-															



3204-000 Date: Prepared by: Checked by: File: Bldg: EMC NO.:

23-Feb-93 TMB CEL 210026 2100

ဖ

ZONE

Sen. TOT. Lat J/H) (BTU/H)

	-	٦	Ί.		
	TOT Sen.	(BTU/H)	3,750		3,750
		(BTU/H)	500		TOTAL
dSpaces	Sensible	(BTU/H)	250		
of Conditione	Typical	Application	Offices, hotels, apts		
Rates of Heat Gain from Occupants of Conditioned Spaces		Degree of Activity	Seated, light work, typing		
	Activity	Type	4		
	No. of	People	15		15
	Zone	Š	9		TOTAL

3,000

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Focture			
Š		Туре	Description	Watts/Fixture	Total Wattage
9	36	7	Fluorescent, 3 - 34w lamps, 16w bellast (2x4 ft. fixture)	118	10,856
	25	5	Fluorescent, 1 - 34w lamp, 16w ballast (1x4 ft. fixture)	920	1250
	င	8	60 Exit Light	82	09
	2	ଷ	20 Incandescent 100w	1001	500
TOTAL	122			TOTAL	12,366

			Peak Value for Internal Gains				
Zone	Zone No. of	Equip.			Heat Gain		Total
Š	Equipmen	Type	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
9	3		3 Microcomputer	350	91%	1,050	3,584
	2		5 Printer (laser)	870	34%	1,740	5,939
	2		49 Radio	71	10%	241	485
	-	12	Typewriter	100	10%	100	341
	-	46	46 Microwave Oven	009	65%	009	2,048
	-	76	76 Coffee Brewer	1,658	100%	1,658	5,659
	-	65	Vending Machine	2002	%96	700	2,389
	2		54 Refrigerator (Frostless 12 cu. ft.)	321	32%	642	2,191
	-	45	Micro Fiche Machine	250	%09	250	853
				TOTAL	62%	6,882	23,488
					The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		

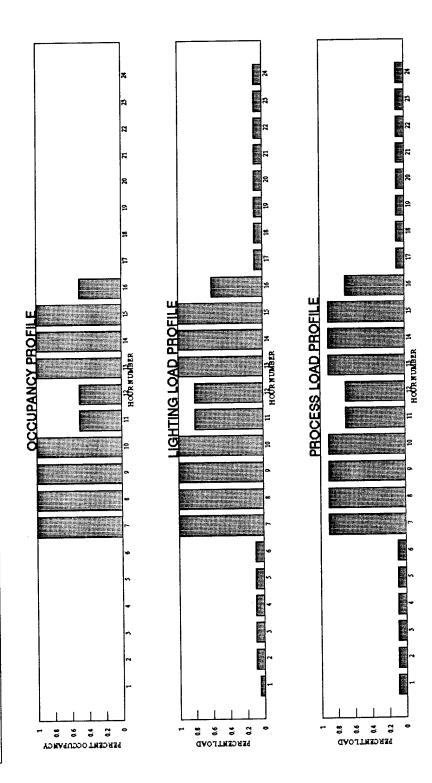
3204-000 EMC NO.:

23-Feb-93 TMB CEL

2100 6 2100Z6

DATE: PREPARED BY: CHECKED BY: FILE: BLDG: ZONE:

BLDG   BLDG   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF   TYPE OF	8 1 1 00 00 00 00 00 00 00 00 00 00 00 00	HOUR 10 11 1 05 0 1 08 0 0 0.7 0	UR NU 12 105 0 05 0 07	HOUR NUMBER 11 12 13 1 05 05 1 1 08 08 1 07 07 09 09 0	UMBER       13     14     15     16     17     18     19     20     21     22     23       1     1     1     0.5     0.1     0.1     0.1     0.1     0.1     0.1     0.1       1     1     1     0.6     0.1     0.1     0.1     0.1     0.1     0.1     0.1       0.9     0.9     0.7     0.1     0.1     0.1     0.1     0.1     0.1     0.1     0.1	16 0.5 0.7	16   17   18   19   20   21   22   1   10   10   10   10	8 1 10.1	8 1.00	21 6 0.1 0	0 0	1 0.1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------	----------------------------------------------	------------------------------------	--------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------	----------------------------------------------------------	----------	--------	------------	-----	-------



23-Feb-93 3204-000

ZONE TIMB CEL 2100Z7 2100 EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activity		Typical	Sensible	Latent	TOT Sen. TOT. L	TOT. Lat
No.	People	Type	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
7	0/	4	Seated, light work, typing	Offices, hotels, apts	250	200	200 17.500	14,000
TOTAL	70					TOTAL	17,500	14.000

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Focture			
Š	Fixtures	Type	Description	Watts/Fixture	Total Wattage
7	12	31	Tungsten – Halogen – 400w	400	4,800
	31	21	21 Incandescent – 150w	150	4,650
	8	22	22 Incandescent – 300w	300	2,400
	15	18	18 Incandescent – 60w	09	006
	11	7	Fluorescent, 3 - 34w lamps, 16w ballast (2x4 ft. fixture)	118	1,298
	2	9	6 Fluorescent, 2 - 34w lamps, 16w ballast 2x4 ft. fixture)	\$	588
	10	5	Fluorescent, 1 – 34w lamp, 16w ballast (1x4 ft. fixture)	20	200
	4	89	60 Exit Light	02	8
TOTAL	98			TOTAL	15216

	Total	(BTU)	11,318	4,096	242	2,389	1,096						19,140
		Total Wattage	3,316	1200	17	200	321						5,608
	Heat Gain	to Space (%)	100%	65%	10%	36%	32%						%08
		Average Wattage	1,658	009	71	200	321						TOTAL
Peak Value for Internal Gains		Description	76 Coffee Brewer	46 Microwave Oven	49 Radio	65 Vending Machine	Refrigerator (Frostless 12 cu. ft.)						
	Equip.	Type	76	46	49	65	\$						
	No. of	Equipmen Type	2	2	-	-	1						
	Zone	Š.	7										

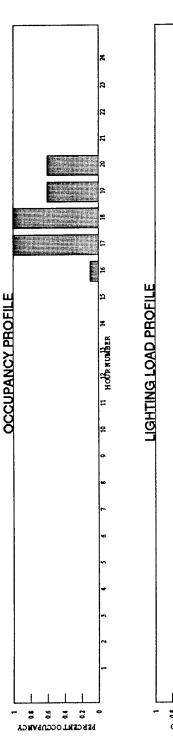
23-Feb-93 3204-000 DATE: PREPARED BY: CHECKED BY: EMC NO.:

TMB 띪

2100Z7

2100 FILE: BLDG: ZONE:

							1																	
BLDG	BLDG	TYPE OF									:	HOL	RN	HOUR NUMBER	H									
TYPE	FUNCTION	PROFILE	-	2	က	4	5 6	9	8 2	3	유	Ξ	12	13	14	15	9	17	18	9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	ଯ	21	22	23 2
3	Auditorium	OCCUPANCY		_	<u> </u>	$\vdash$	_	L	L								0.1	-	-	0.6	9.0	_	Н	
		LIGHTING	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.1	-	1.	0	0.	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	02	02	02	02 0	) 5 (	0.1	1 0	1.0 1.
		PROCESS	0.1	0.1	1.	1.1	0	0	0	1 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	80	8.0	0.8	9.8	),5 0	1.1	.1 0.1







01 Card - Job Information -----

Project: EEAP STUDY, EXPANSION OF EMCS

Location: PT. LEONARD WOOD, MO

Client: US ARMY

Program User: E M C ENGINEERS, INC.

0	ARD 08 Clim	atic Inform	ation					
	Summer	Winter	Summer	Summer	Winter		Summer	Winter
Weathe	or Clearness	Clearness	Design	Design	Design	Building	Ground	Ground
Code	Number	Number	Dry Bulb	Wet Bulb	Dry Bulb	Orientation	Reflect	Reflect
SPRING	3PM .97	.97	94	78	3			

CARD 0	9 Load Sim	ulation P	eriods			
1st Month	Last Month	Peak	1st Month	Last Month	1st Month	Last Month
Cooling	Cooling	Cooling	Summer	Summer	Daylight	Daylight
Simulation	Simulation	Load Hr	Period	Period	Savings	Savings
MAY	SEP		JUN	SEP	APR	OCT

CARI	D 10 Lo	oad Simulation	n Paramet	ers		
Cooling	Heating		Airflow	Airflow	Room	Put Wall
Load	Load	Ventilation	Input	Output	Circulation	RA Load
Method	Method	Method	Units	Units	Rate	to Room
menn_ma1	77E7771 - TE 1	OADB	ACTUAL	ACTUAL	MED-RCR	NO

CARD 1	1 Energy S	imulation Par	ameters		
1st Month	Last Month	Level			Building
Energy	Energy	Of	Holiday	Calendar	Floor
Simulation	Simulation	Calculation	Code	Code	Area
JAN	DEC	ROOM	1978	1978	74789

CA	RD 13	Daylight:	ing Param	eters -				
	Atmos	pheric						
Mois	ture	Turb	idity	In	side Visib	le Refle	ctivity	Daylighting
							Partition	
		.07	.07					

_____Load Section Alternative #1 -----

--- Load Alternative ----

Mumber

1

Description

BLDG 2100 BASERUN FT LEONARD WOOD

CA	RD 20 Gen	eral Room Parameters		<del>-</del>							
•	Zone						Acoustic	Floor to	Duplicate	-	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number		Descrip	Length	Width	Туре	Height	Resistance	Height	Multiplier	Zone	
1	1	ADMIN OFFICES	187.16	100	2	0		12			
2	2	COMPUTER ROOM	86.1	10	2	0		12			
2	3	ASSEMBLY HALL	100	76.67	2	0		18.9			
,	•	MEDICAL CLINIC	100	141.42	2	0		12			
4	•	CLOTHING ISSUE	100	126.8	2			20			
5	5	OFFICES-STORE	100	132.22	2	0		12			
6	6		100	75.01	2	0		17.7			
7	7	CHAPEL-AUDTRM	100	73.01	•	•					

н 7	Design DB 75	RH	T'stat Driftpoint	T'stat Schedule CLG75SUM	Room Design DB 70	T'stat Driftpoint	T'stat Schedule HTG70WNT	Location Flag ROOM	No. Ers Average MED70	
1 2 3				CLG75			HTGOFF			
<b>4</b> 5										YES

CA	RD 22	Roof Param	eters						
		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof		Roof
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
м	1				.029	50			.74
1	1	YES							
2	1	YES				•			
3	1	NO	100	80.81					
4	1	NO	141.87	100					
5	1	YES							
6	1	NO	100	98.87					
7	1	NO	100	79.63					

CA	RD 25 80	chedules								
Room					Reheat	Cooling	Heating	Auxiliary	ROOM	Daylighting
Rumber	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
1	P2100	L2100	AVAIL	AVAIL		AVAIL	AVAIL			
2	P2100	L2100	AVAIL	AVAIL		AVAIL	AVAIL			
3	P2100	L2100Z3	AVAIL	AVAIL		AVAIL	AVAIL			
4	P2100	L2100Z3	AVAIL	AVAIL		AVAIL	AVAIL			
5	P2100	L2100Z3	AVAIL	AVAIL		AVAIL	AVAIL			
6	P2100	L2100	AVAIL	AVAIL		AVAIL'	AVAIL			
7	P2100Z7	L2100Z7	AVAIL	AVAIL	•	AVAIL	AVAIL			

		-	nd Lights -				Lighting		Percent	Daylig	hting
Room Rumber	People Value	People Units PEOPLE	People Sensible	People Latent	Lighting Value	Lighting Units WATTS	Fixture Type RECFL-NV	Ballast Factor	Lights to Ret. Air	Reference Point 1	Reference Point 2
l	112		250	200	24560						
2	6		255	255	1176	WATTS	RECFL-NV	1			
3	130	PEOPLE	230	190	15500	WATTS	RECFL-NV	1			
	135	PEOPLE	230	190	14200	WATTS	RECFL-NV	1			
5	7	PEOPLE	315	325	15800	WATTS	RECFL-NV	1			
5	15	PEOPLE	315	325	12800	WATTS	RECFL-NV	1			
7	75	PEOPLE	210	140	12600	WATTS	RECFL-NV	1			

CA	RD 28 Mi	scellaneous Equipmen	nt								
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load		Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	
н	1	•		WATTS		ELEC					Bame-ra
1	1	OFFICE EQUIP.	71896		E2100Z1			53			
2	1	OFFICE EQUIP.	23200		E2100Z2			62			
4	1	MEDICAL EQUIP.	19130		E2100Z4			40			
5	1	EOUIPMENT	159		E2100Z5			16			
6	1	OFFICE EQUIP.	6882		E2100Z6			62			
7	1	APPLIANCES	5608		E210027			80			

		Venti	lation			Infili	tration			
Room		ling		ting				ting	Reheat	Minimum
Number		Units	Value	Units	Value	Units	Value	Units	Value	Unite
М		CFM		CFM		CFM		CFM		
1	1260		1260		963		963			
2					80		80			
3	770		770		445		445			
4	1270		1270		664		664			
5	770		770		662		662			
6	700		700		277		277			
7	2400		2400		740		740			

		Wall Para			Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number		Length	Height	U-Value	Туре	Direction	Tilt	Alpha	Multiplier
M	1				89			.74	
1	1	100	27.16	.094		0			
1	2	100	18.62	.092		180			
1	3	100	11.2	.103		90			
1	4	100	24.64	.1		270			
2	1	57.4	10	.092		180			
2	2	29.4	10	.092		270			
3	1	115.7	10	.092		0			
3	2	138.1	10	.097		180			
3	3	48.6	10	.092		90			
3	4	48.6	10	.092		270			
4	1	10.8	10	.092		0			
4	2	100	36.98	.094		180			
4	3	99	10	.092		90			
4	4	91	10	.092		270			
5	1	100	30.45	.135		0			
5	2	96.9	10	.092		90			
5	3	100	14.28	.092		270			
6	1	100	14.98	.101		0			
6	2	72.8	10	.109		90			
7	1	100	15.66	.105		0			
7	2	100	16.32	.092		180			
7	3	100	14.28	.096		90			
7	4	100	15.96	.096		270			

CA	RD 25	Wall/Glas	ss Parame	ters							
				Pct Glass			External	Internal			Inside
Room	Wall	Glass	Glass	or No. of	Glass	Shading	Shading	Shading	Solar to		Visible
Number	Rumber	Length	Width	Windows	U-Value	Coefficient	Туре	Туре	Ret. Air	Transmittance	Reflectance
M	1			1	.621	.58		3		. 8	
1	1	20.3	10								
1	2	18.2	10								
1	4	24	10								
2	1	10	9.3								
2	2	10	2.7								
3	1	10	17.1					1			
3	2	34.4	10					1			
3	3	10	8.5					1			
3	4	12.8	10					1			
4	2	49.4	10								
4	3	12.8	10								
4	4	12.8	10								
6	1	10	5.3								
7	1	34.9	10					1			

		Ma	in			Auxi	liary			
Room	Coo	ling	Bea	ting	Coo	ling	Hea	ting	Room E	xhaust
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
M		CFM		CFM				CFM		
1	12530						12870			
2	5600									
3	7670		7670							
4	12690						3240			
5	7710		7710							
5	7010						1980			
7	12000		12000							

Room	Partition	Partition	Partition	Partition	Const	Тепр	Cooling	Heating	Adjacen
Number	Number	Length	Reight	U-Value	Туре	Plag	Temp	Temp	Room No
M	1				105	CONSTANT			
1	1	1303	8.5						
2	1	59	8.5						
3	1	315	23.3						
4	1	617.2	15						
5	1	250	23.5						
6	1	639	12						
7	1	393.2	23.3						

	Exposed	Slab-				E	xboseq 1.	loor		
Room	Floor	Perimeter	Loss	Floor	Floor	Const	Temp	Cooling	<b>Heating</b>	-
Number	Number	Length	Coefficient	Area	U-Value	Туре	Flag	Temp	Temp	Room No
l	1	627	.03							
2	1	62	.83							
3	1	16	.83							
•	1	219	.83							
5	1	199	.83							
5	1	132	.83							
7	1	232	.83							

CAR	D 34 In	ternal Shadi	.ng	 	 			
		Overall			 	Lockout	s	
-		Shading Coefficent	Schedule Code	Visible Transmittance	 Max Solar	Solar Ctrl Prob	Max Glare	Glare Ctrl Prob
3	452	. 58	FL-INSHD					

----- System Section Alternative #1 -----

-----CARD 39-- System Alternative -----

Number Description

82

BLDG 2100 BASERUN FT LEONARD WOOD

----CARD 40--- System Type ----------OPTIONAL VENTILATION SYSTEM-----System Ventil Deck Cooling Heating Cooling Heating Static Set System Location SADBVh SADBVh Schedule Schedule Pressure Number Type VAVESK PTAC 82 3 VAVFSK VAVFSK

CARD	41 Zon	e Assignm	ent									
System Set	Ref	#1	Ref	#2	Ref	#3	Ref	#4	Ref	#5	Ref	#6
Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3										
4	4	4										
5	5	5										
6	6	6										
7	7	7										

CA	RD 42-	Fan	SP and	Duct Par	ameter	g					
System	Cool	Beat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	8P	SP	SP	BP	SP	Loc	Loc	Ht Gn	Loc	Path
1	4				.25		OMIT			RETAIR	PLENUM
2	.5						SUPPLY			OTHER	ROOMDK
3	3						OMIT			OTHER	DUCTED
4	5				.25		OMIT			RETAIR	PLENUM
5	1.75						OMIT			OTHER	DUCTED
	3.68				. 25		OMIT			RETAIR	PLENUM
6					.25		OMIT			RETAIR	PLENUM
7	2.5						OHII				

-----CARD 43-- Airflow Design Temperatures -----System Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Design Set Cooling Cooling Heating Cooling Cooling Preheat Preheat Room Ht Rec

```
-----CARD 43-- Airflow Design Temperatures -----
System Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Design
Set Cooling Cooling Heating Heating Cooling Cooling Preheat Preheat Room Ht Rec
Number SADE SADE SADE SADE LV DE LV DE LV DE RE DIff
3
7 68.6 68.6
```

CA	RD 44 Sy	stem Op	tions								
System	Econ	Econ	Max Pct	Direct	Indirect	1st Stage		Exh			
 Set	Тура	On	Outside	Evap	Evap	Evap	Fan	Effective	ness	Control	
Number	Flag	Point	Air	Cooling	Cooling	Cooling	Cycling	System	Room	System	Room
1	DRY-BULB	65	100								
2											
3	DRY-BULB	65	100								
4	DRY-BULB	65	100								
5											
6	DRY-BULB	65	100								
7											

System	Main		Direct	Indirect	Auxiliary	Main	Main			Auxiliary
Set	Cooling		Evap	Evap	Cooling	Heating	Preheat	Reheat	Mech.	Heating
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coi1	Humidity	Coil
1	FLCCOIL	AVAIL	OFF	OFF	OFF	OFF	FLHCOIL	OFF	OFF	FLHCOIL
2	AVAIL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	AVAIL	OFF
3	FLCCOIL	AVAIL	OFF	OFF	OFF	FLHCOIL	OFF	OFF	OFF	OFF
4	FLCCOIL	AVAIL	OFF	OFF	OFF	OFF	FLHCOIL	OFF	OFF	FLHCOIL
5	OFF	OFF	OFF	OFF	OFF	AVAIL	OFF	OFF	OFF	OFF
6	FLCCOIL	AVAIL	OFF	OFF	OFF	OFF	FLECOIL	OFF	OFF	FLHCOIL
7	FLCCOIL	OFF	OFF	OFF	OFF	FLHCOIL	OFF	OFF	OFF	OFF

CA	RD 48 Co	oling Capa	city Overr	ides					
System			Misc		MAIN	COOLING		AUX CC	OLING
Set	People	Lights	Loads	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity
Number	Variance	Variance	Variance	Value	Units	Sizing	Location	Value	Units
1				535.9	MBH				
2				122.6	MBE				
3				371.3	MBH				
4				539.9	MBH				

CA	RD 49 He	ating Capa	city Overr	ides						
System	MAIN B	BATING	PREH	EAT	REH	EAT	HUMIDIF	ICATION	AUX HE	
Set	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
1			159.9	MBH					244.8	MBH
2	0	MBH								
3	319.2	MBH								
4			317.3	MBH					275.7	MBH
5	397.2	MBH								
6			183.6	MBH					111.3	MBH
7	438.8	MBH								

----- Equipment Section Alternative #1 -----

-----CARD 59-- Equipment Description / TOD Schedules -----

Riec Consump Elec Demand Demand Alternative Time of Day Time of Day Limit

Number Schedule Schedule Max KW Alternative Description

BLDG 2100 BASERUN FT LEONARD WOOD

	-CARD 62	Coolin	g Equip	ment Para	ameters								
	Equip	Num			oling				RECOVERY		Seq		Demand
	Code	Of	Capa	city	Ene	rgy	Capa	city	Ene	rgy	Order	Seq	Limit
Num	Name	Units	Value	Units	Value	Units	Value	Units	Value	Units	Num	Type	Number
1	EQ1100L	1	95	TONS							1	PAR	
2	E01100L	1	95	TONS							2	PAR	

Set Fan Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Vent Number KW KW KW KW KW KW Fan Fan Fan Fan 2.66

1 13.055

```
-----CARD 62-- Cooling Equipment Parameters -----
TONS
3 BQ1161 1 10
-----CARD 63-- Cooling Pumps and References -----
Cool ---CHILLED WATER---- -----CONDENSER----- ---HT REC or AUX---- Switch-
Ref Full Load Full Load Full Load Full Load Full Load Full Load over Cold Cooling Misc.
Num Value Units Value Units Value Units Control Storage Tower Access.
1 124
        FT-WATER
-----CARD 65-- Heating Load Assignment -----
Load All Coil
              -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Assignment Loads To
Reference Heating Ref Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End
       1 1 1 3 3 4 4 5 5 6 6 7 7
              1 1 3 3 4 4 5 5 6
-----CARD 67-- Heating Equipment Parameters -----
                             Energy Seq Switch
                                                                    Demand
Heat Equip Number Hw Pmp
                                              Order over Hot Misc.
                                                                    Limit
          Of Full Ld
                          Cap'y
                                   Rate
Ref Code
                                               Number Control Strg Acc. Cogen Number
        Units Value Units Value Units Value Units
Number Name
1 EQ2001 1 3.73 KW 2400 MBH 80 FCTEFF 1
2 EQ2001 1 3.73 KW 2400 MBH 80 PCTEFF 2
                                               1
-----CARD 69-- Fan Equipment Parameters -----
      Cooling Heating Return Exhaust Auxiliary Room
                                         Optional
Set
                                    Exhaust Ventilation
                       Fan Supply
            Fan Fan
     Fan
Number
                              EO4003
      E04002
1
      EQ4003
      EQ4002
                              EQ4003
4
     EQ4002
      EQ4002
5
                              EQ4003
      EQ4002
6
      EQ4002
-----CARD 70-- Fan Equipment KW Overrides -----
   Room Opt
System Cool Heat Ret Exh Aux Room Opt
```

CA	RD 70-	- Fan	Equip:	ment KW	V Overrides								
		MAIN 8	YSTEM-		OTH	ER SYS	TEM	D	EMAND	LIMIT	IMIT PRIORITY		
System	Cool	Beat	Ret	Exh	Aux	Room	Opt				Room	Opt	
Set	Fan	Fan	Fan	Fan	Sup	Exh	Vent	Cool	Heat	Aux	Exh	Vent	
Rumber	KW	KW	KW	KW	KW	KW	KW	Fan	Fan	Fan	Fan	Fan	
2	3.73												
3	7.46												
4	11.19				1.306	5							
5	5.595												
6	9.325				.433								
7	7.46												

----- Load Section Alternative #2 -----

---- Load Alternative ----

Number Description

BLDG 2100 NIGHT SETBACK FT LEONARD WOOD

	DD 20 Con	eral Room Parameters									
	Zone	BIRI NOOM I WILMOODIO					Acoustic	Floor to	Duplicate	Duplicate	
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Туре	Height	Resistance	Height	Multiplier	Zone	
1	1	ADMIN OFFICES	187.16	100	2	0		12			
2	2	COMPUTER ROOM	86.1	10	2	0		12			
3	3	ASSEMBLY HALL	100	76.67	2	0		18.9			
4	4	MEDICAL CLINIC	100	141.42	2	0		12			
5	5	CLOTHING ISSUE	100	126.8	2			20			
_	6	OFFICES-STORE	100	132.22	2	0		12			
7	7	CHAPEL-AUDTRM	100	75.01	2	0		17.7			
6 7	6 7				_						

CA	RD 21 The	rmostat	Parameters -							
	Cooling	Room	Cooling	Cooling	<b>Heating</b>	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
м	75		_	CSB75SUM	70		HSB70WNT	ROOM	MED70	NO
1	, ,									YES
2				CLG75			HTGOFF			
_				020.5						
3										YES
4										
5										YES
6										

# Utility Description Reference Table

#### Schedules:

AVAIL AVAILABLE (100%)

CDDC788M CLG DDC T-STAT AT 78 (MAY THRU SEPT)

CLG75 COOLING TSTAT SCHEDULE - 75

CLG758UM COOLING TSTAT AT 75 (MAY THRU SEPT)

CSE75SUM COOLING SE TSTAT AT 75 (MAY TERU SEPT) .

R2100Z1 EQUIPMENT SCHEDULE - BLDG 2100 ZONE 1

E210022 EQUIPMENT SCHEDULE - BLDG 2100 ZONE 2

E210024 EQUIPMENT SCHEDULE - BLDG 2100 ZONE 4

E210025 EQUIPMENT SCHEDULE - BLDG 2100 ZONE 5

E2100Z6 EQUIPMENT SCHEDULE - BLDG 2100 ZONE 6

E2100Z7 EQUIPMENT SCHEDULE - BLDG 2100 ZONE 7

FL-INSED INTERNAL SHADING: VENITIAN BLINDS

FLCCOIL COOLING COIL SCHEDULE - MAY THRU SEPT

PLECOIL HEATING COIL SCHEDULE - OCT THRU APR

HDDC68WT HEATING DDC T-STAT AT 68 (OCT TO APR)

HSB70WNT HEATING SE T-STAT AT 70 (OCT TO APR)

HTG70WNT HEATING T-STAT AT 70 (OCT TO APR)

HTGOFF MEATING ALWAYS OFF

L2100 LIGHTING SCHEDULE - BLDG 2100 ZONE 8

L2100Z3 LIGHTING SCHEDULE - BLDG 2100 ZONE 3

L2100Z7 LIGHTING SCHEDULE - BLDG 2100 ZONE 7

OFF ALWAYS OFF

P2100 PEOPLE SCHEDULE - BLDG 2100 ZONE 8

P2100Z7 PEOPLE SCHEDULE - BLDG 2100 ZONE 7

### System:

PTAC PACKAGED TERMINAL AIR COND.

SZ SINGLE ZONE

VAVFSK VAV WITE FORCED FLO SKIN

## Equipment:

Cooling:

EQ1100L AIR-CLD RECIP >45 TONS

EQ1161 AIR-CLD COND COMP <15 TONS

Heating:

EQ2001 GAS FIRE TUBE HOT WATER

Fan:

EQ4002 BI CENTRIF. FAN C.V.

EQ4003 FC CENTRIF. FAN C.V.

Schedule Name: AVAIL
Project: AVAILABLE (100)
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

Schedule Name: CDDC788M

Project: CLG DDC T-STAT AT 78 (MAY THRU

Location:

Client:

Program User:

Comments: CLG DDC T-STAT AT 78 (MAY THRU

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

----

0 100

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

# Hour Temperature

0 90

,

6 76

19 90

24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

--- ------

0 100

Schedule Name: CLG75

Project: COOLING TSTAT SCHEDULE - 75

Location:

Client:

Program User:

Comments: COOLING THERMOSTAT - SET AT 75

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 75

Schedule Name: CLG75SUM

Project: COOLING TETAT AT 75 (MAY THRU S

Location:

Client:

Program User:

Comments: COOLING TSTAT AT 75 (MAY THRU

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

----

100 0

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUR

Hour Temperature

0 75

24

Starting Month: OCT Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

Schedule Name: CSB75SUM

Project: COOLING SB TSTAT AT 75 (MAY THR

Location:

Client:

Program User:

Comments: COOLING SB TSTAT AT 75 (MAY TH

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

# Hour Temperature

0 90

75

19

24

6

Starting Month: OCT | Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

0 100

Project: EQUIPMENT SCHEDULE - BLDG 2100

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: EQUIPMENT SCHEDULE - ZONE 1

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

### Hour Util Percent

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Bour Util Percent

Project: EQUIPMENT SCHEDULE - BLDG 2100

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: EQUIPMENT SCHEDULE - ZONE 2

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Bour	Util Percent
0	70
7	100
16	90
17	70

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent
---- 0 70
24

Project: EQUIPMENT SCHEDULE - BLDG 2100

Location: PT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - ZONE 4

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

### Eour Util Percent 0 10 7 80 16 40 17 10 24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent
--- ---0 10
24

Project: EQUIPMENT SCHEDULE - BLDG 2100

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - ZONE 5

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

### Hour Util Percent ---- 0 0 7 80

16 50

17 0

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 0

Project: EQUIPMENT SCHEDULE - BLDG 2100

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: EQUIPMENT SCHEDULE - ZONE 6

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

## Bour Util Percent 0 10 7 90 11 70 13 90 16 70 17 10

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 10

24

Project: EQUIPMENT SCHEDULE - BLDG 2100

Location: FT LEGRARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - ZONE 7

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	10
16	50
17	80
21	50
22	10
24	

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour	Util	Percent
0		10

Schedule Name: FL-INSHD Project: INTERNAL SHADING: VENITIAN BLIN Location: PT LEONARD WOOD Client: US ARMY Program User: EMC ENGINEERS, INC. Comments: INTERNAL SHADING SCHEDULE Starting Month: JAN Ending Month: APR Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent ----75 0 24 Starting Month: MAY Ending Month: SEP Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent

0 35

24

Starting Month: OCT Ending Month: DEC
Starting Day Type: WKDY Ending Day Type: WKDY

Hour Util Percent
--- 0 75
24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 25
24

Schedule Name: FLCCOIL

Project: COOLING COIL SCHEDULE - MAY THR

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: COOLING COIL SCHEDULE - MAY TH

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

----

0 (

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

24

Starting Month: OCT | Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 0

```
Schedule Name: FLHCOIL
Project: ERATING COIL SCHEDULE - OCT THR
Location: FT LEONARD WOOD, MO
Client: US ARMY
Program User: EMC ENGINEERS, INC.
Comments: HEATING COIL SCHEDULE - OCT TH
Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN
Bour Util Percent
 0
      100
 24
Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
 0 0
 24
Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
  0
       100
```

Schedule Name: HDDC68WT

Project: HEATING DDC T-STAT AT 68 (OCT T

Location:

Client:

Program User:

Comments: HEATING DDC T-STAT AT 68 (OCT

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

0 55 68 19 55

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

----35 0

24

24

Starting Month: OCT | Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

----55 0

```
Schedule Name: HSB70WNT
Project: HEATING SB T-STAT AT 70 (OCT TO
Location:
Client:
```

Program User:

Comments: EKATING SB T-STAT AT 70 (OCT T

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

### Eour Temperature 0 55 6 70 19 55 24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35
24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Temperatur
0	55
6	70
19	55
24	

Schedule Name: HTG70WNT

Project: HEATING T-STAT AT 70 (OCT TO AP

Locations

Client:

Program User:

Comments: HEATING T-STAT AT 70 (OCT TO A

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN | Ending Day Type: SUN

### Hour Temperature

----

0 70

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

----

0 35

24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

### Hour Temperature

0 70

Schedule Name: ETGOFF

Project: HEATING ALWAYS OFF

Location:

Client: Program User:

Comments: HEATING ALWAYS OFF

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 0

Schedule Name: L2100

Project: LIGHTING SCHEDULE - BLDG 2100 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHTING SCHEDULE - DINING FAC

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
6	100
9	50
11	100
14	50
16	100
19	10

Project: LIGHTING SCHEDULE - BLDG 2100 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHTING SCHEDULE - ZONE 3

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

### Hour Util Percent ----0 10 7 100 100

11

13 100

16 60

10 17

24

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

----

0 10

Project: LIGHTING SCHEDULE - BLDG 2100 Z

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHTING SCHEDULE - AUDITORIUM

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SAT

### Hour Util Percent

0	10
16	20
21	10

Starting Month: JAN Ending Month: DEC Starting Day Type: SUN Ending Day Type: SUN

### Bour Util Percent ---0 10 10 100 12 10

15 20 21 10

Schedule Name: OFF
Project: ALWAYS OFF
Location:
Client:
Program User:

Comments:

Starting Month: JAN Ending Month: ETG Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 0

Schedule Name: P2100

Project: PROPLE SCHEDULE - BLDG 2100 ZON

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: PEOPLE SCHEDULE - DINING FACIL

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	0
6	20
7	100
8	50
9	20
11	50
12	100
13	50
14	20
17	100
18	50
19	0

Project: PEOPLE SCHEDULE - BLDG 2100 ZON

Location: PT LEOMARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: PEOPLE SCHEDULE - AUDITORIUM

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SAT

## Hour Util Percent 0 0 16 10 17 100 19 60 21 0

Starting Month: JAW Ending Month: DEC Starting Day Type: SUN Ending Day Type: SUN

# Hour Util Percent 0 0 10 100 12 0 16 10 17 100 19 60 21 0

PAGE 1

EEAP STUDY, EXPANSION OF EMCS FT. LEONARD WOOD, MO US ARMY E M C ENGINEERS, INC.

Weather File Code: SPRINGFM

Location: SPRINGFIELD, MISSOURI

Latitude: 37.0 (deg)
Longitude: 93.0 (deg)
Time Zone: 6

Elevation: 1,265 (ft)
Barometric Pressure: 28.5 (in. Hg)

Summer Clearness Number: 0.97
Winter Clearness Number: 0.97
Summer Design Dry Bulb: 94 (F)
Summer Design Wet Bulb: 78 (F)
Winter Design Dry Bulb: 3 (F)
Summer Ground Relectance: 0.20
Winter Ground Relectance: 0.20

Air Density: 0.0724 (Lbm/cuft)
Air Specific Heat: 0.2444 (Btu/lbm/F)

Density-Specific Heat Prod: 1.0621 (Btu-min./hr/cuft/F)
Latent Heat Factor: 4,675.1 (Btu-min./hr/cuft)
Enthalpy Factor: 4.3449 (Lb-min./hr/cuft)

Design Simulation Period: May To September
System Simulation Period: January To December
Cooling Load Methodology: TETD/Time Averaging

Time/Date Program was Run: 13:29:13 3/17/93
Dataset Name: 2100 .TM

AIRFLOW - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD

(Design Airflow Quantities)

				Main			Auxil.	Room
		Outside	Cooling	Heating	Return	Exhaust	Supply	Exhaust
System	System	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow
Number	Туре	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
1	VAVFSK	1,260	12,530	o	13,493	12,530	12,870	0
2	PTAC	0	5,600	0	5,680	80	0	0
3	sz	770	7,670	7,670	8,115	7,670	0	0
4	VAVFSK	1,270	10,740	0	11,404	10,740	3,240	0
5	SZ	770	0	7,710	8,372	1,432	0	0
6	VAVFSK	700	5,032	0	5,309	5,032	1,980	0
7	sz	2,400	12,000	12,000	12,740	3,140	0	0
Totals		7,170	53,572	27,380	65,113	40,624	18,090	0

CAPACITY - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD

(Design Capacity Quantities)

			Coo	ling					Heating			
		Main Sys.	Aux. Sys.	Opt. Vent	Cooling	Main Sys.	Aux. Sys.	Preheat	Reheat	Bumidif.	Opt. Vent	Heating
System	System		_		Totals	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Totals
Number	Туре	(Tons)	(Tons)	(Tons)	(Tons)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)
1	VAVFSK	44.7	0.0	0.0	44.7	0	-244,800	-159,900	0	o	0	-404,700
_	PTAC	10.2			10.2	0	0	-376,259	0	0	0	0
	sz	30.9			30.9	-319,200	0	0	0	0	0	-319,200
	VAVFSK	45.0			45.0	. 0	-275,700	-317,300	0	0	0	-593,000
	SZ	0.0			0.0	-397,200	. 0	0	0	0	0	-397,200
	VAVESK	21.8			21.8	•	-111,300	-183,600	0	0	0	-294,900
_	-	46.9			46.9		0		o	0	0	-438,800
Totals	SZ	199.5				-1,155,200	-631,800	-1,173,998	0	0	0	-2,447,800

The building peaked at hour 15 month 7 with a capacity of 125.7 tons

Trane Air Conditioning Economics

By: Trane Customer Direct Service Network

ENGINEERING CHECKS - ALTERNATIVE 1
BLDG 2100 BASERUN FI LEONARD WOOD

-----ENGINEERING CHECKS-----

			Percent		Cool:	ing		Heat	ing	
System	Main/	System	Outside	Cfm/	Cfm/	<b>S</b> q <b>F</b> t	Btuh/	Cfm/	Btuh/	Floor Area
Number	Auxiliary	Туре	Air	Sq Ft	Ton	/Ton	Sq Ft	Sq Ft	Sq Ft	Sq Ft
1	Main	VAVFSK	10.06	0.67	280.6	419.1	28.63	0.00	-8.54	18,716
1	Auxiliary	VAVFSK	0.00	0.69	0.0	0.0	0.00	0.00	-13.08	18,716
2	Main	PTAC	0.00	6.50	548.1	84.3	142.39	0.00	0.00	861
3	Main	sz	10.04	1.00	247.9	247.8	48.43	1.00	-41.63	7,667
4	Main	VAVFSK	11.82	0.76	238.7	314.3	38.18	0.00	-22.44	14,142
4	Auxiliary	VAVFSK	0.00	0.23	0.0	0.0	0.00	0.00	-19.50	14,142
	Main	sz	9.99	0.00	0.0	0.0	0.00	0.61	-31.32	12,680
6	Main	VAVFSK	13.91	0.38	230.7	606.1	19.80	0.00	-13.89	13,222
	Auxiliary	VAVFSK	0.00	0.15	0.0	0.0	0.00	0.00	-8.42	13,222
	Main	sz	20.00	1.60	256.0	160.0	75.00	1.60	-58.50	7,501

System 1 Block VAVFSK - VAV WITH FORCED FLO SKIN

-				nmaw +++++		*****	***	*** CT.G ED	ACF P	EAK *****	***** HFA	TING COIL !	PEAK **	****
	********* : Time ==>	***** CO	Mo/Hr:	PEAK ***** 7/15	********		*	Mo/Hr			. man		0/ 0	
Outside A		OAD		94/ 78/124.0			*	OADB				OADB:	0	
Offering N			_,,				*			*				
		Space	Ret. Air	Ret. Air	Net	Percnt	*	Spac	e	Percnt *	Space Pe	ak Coil	Peak	Percn
	Sen	ıs.+Lat.	Sensible	Latent	Total	Of Tot	*	Sensibl	e	Of Tot *	Space Se			Of To
Envelope	Loads	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)	*	(Btuh	)	(%) *	(Btu		tuh)	(♣
Skylite		0	0		0	0.00	*		0	0.00 *		0	0	0.0
Skylite		0	0		, 0	0.00	*		0	0.00 *		0	0	0.0
Roof Co	nd	38,808	0		38,808	7.60	*	38,80	8	18.15 *		0	0	0.0
Glass S	olar	24,812	0		24,812	4.86	*	24,81	2	11.60 *		0	0	0.0
Glass C	ond	7,032	0		7,032	1.38	*	7,03	2	3.29 *		0	0	0.0
Wall Co	ond	10,402	0		10,402	2.04	*	10,40	2	4.87 *		0	_	0.0
Partiti	.on	0			0	0.00	*		0	0.00 *		0	0	0.0
Exposed	Floor	0			0	0.00	*		0	0.00 *		0	0	
Infiltr	ation	55,376			55,376	10.85	*	19,43	13	9.09 *		0	0	0.0
Sub Tot	al==>	136,430	0		136,430	26.74	*	100,46	16	47.00 *		0	0	0.0
Internal	Loads						*			*		_	_	
Lights		81,309	0		81,309	15.93	*	81,30	9	38.03 *		0	0	0.0
People		47,880			47,880	9.38	*	25,48	30	11.92 *		0	0	0.0
Misc		130,052	0	0	130,052	25.49	*	130,05	52	60.83 *		0	0	0.0
Sub Tot	al==>	259,241	0	0	259,241	50.80	*	236,84	11	110.77 *		0	0	0.0
Ceiling L		0	0		0	0.00	•		0	0.00 *		0	0	0.0
Outside A		0	0	0	72,455	14.20	*		0	0.00 *		0	0	0.0
Sup. Fan					42,174	8.26	*			0.00 *			0	0.0
Ret. Fan			0		0	0.00	*			0.00 *			0	0.0
Duct Heat			0		0	0.00	*			0.00 *			0	0.0
OV/UNDR S	Sizing	0			0	0.00	*	-123,5	23	-57.77 *		0	0	0.0
Exhaust F	Beat		O	0	0	0.00	*			0.00 *			0	0.0
Terminal	Bypass		C	0	0	-0.00	*			0.00 *				0.0
							*	-42 B		100.00 *		0	0	0.0
Grand Tot	tal==>	395,670	C	0	510,299	100.00	, *	213,8	J 4	100.00		Ü	-	
			coo	LING COIL S	ELECTION							AREAS		
	Total C			Coil Airfl		ng DB/WE		Leavi	ng DB	/WB/HR	Gross To		ass (sf	) (%)
	(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F De	g F Gra	ins	Deg F D			Floor	18,716		
Main Clg	44.7	535.9	425.2	19,769	76.2 6	3.5 7	71.7	56.9	54.3	61.9	Part	11,076		
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	627		•
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	18,716	_	0
Totals	44.7	535.9									Wall	8,162	ь	36
					AI	THE CAME	( o f m \		E	NGINEERING	CHECKS	TEMPE	RATURES	(F)
		COIL SEL		T.v.a		Cooling		Heating		% OA	10.1	Type	Clg	Htg
	Capacity			Lvg	Type			0	_	Cfm/Sqft	0.67	SADB	58.9	0.
	(Mbh)	(cf			Vent	1,260 960		0		Cfm/Ton	280.57	Plenum	75.0	0.
Main Htg	0.0		0 0.0		Infil	12,53		0	_	Sqft/Ton	419.09	Return	75.0	0.
Aux Htg	-244.8		870 62.		Supply		0	0		Btuh/Sqft		Ret/OA	76.2	0.
Preheat	-159.9		260 3.		Mincfm Return	19,76		0	_	People	112	Runarnd	75.0	0.
Reheat	-0.0		0 0.		Exhaust	1,26		0		% OA	0.0	Fn MtrT	0.7	0.
Humidif	0.0		0 0.		Rm Exh		0	0		Cfm/SqFt	0.00	Fn BldT	D 0.5	0.
Opt Vent	0.0		0 0.	0.0	Auxil		0	12,870		Btuh/SqFt	-8.54	Fn Fric	t 1.5	0.
Total	-404.7	,						•	-	-				

2 Peak PTAC - PACKAGED TERMINAL AIR COND.

Peaked at Tim	8 ==>		Mo/Hr: 9	9/15			*	Mo/Hr:	9/15	*	м	o/Br: 0/	0	
Outside Air =	•	OAD	B/WB/HR: 8	33/ 70/ 94.8			*	OADB:	83	*		OADB: 0		
							*			*				
		Space	Ret. Air	Ret. Air	Net	Percnt	*	Space	Per	cnt *	Space Peak	Coil Pe	ak F	ercn
	Sens.	+Lat.	Sensible	Latent	Total	Of Tot	*	Sensible	of T	ot *	Space Sens	Tot Se	ns C	of To
nvelope Load	s (	Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)	*	(Btuh)	(	*) *	(Btuh)	(Btu	h)	(8
Skylite Sol	r	0	0		0	0.00	*	(	0.	00 *	0		0	0.0
Skylite Con	d	0	0		. 0	0.00	*	(	0.	00 *	0		0	0.0
Roof Cond		1,261	0		1,261	1.74	. *	1,261	1.	86 *	0		0	0.0
Glass Solar	1	0,440	0		10,440	14.41	*	10,440	15.	39 *	0		0	0.0
Glass Cond		507	0		507	0.70	*	507	0.	75 *	0		0	0.0
Wall Cond		564	0		564	0.78	*	564	0.	83 *	0		0	0.0
Partition		0			0	0.00	*	(	0.	00 *	0		0	0.0
Exposed Flo	or	0			0	0.00	*	(	0.	00 *	o		0	0.0
Infiltratio	n	1,803			1,803	2.49	*	670	0.	99 *	o		0	0.0
Sub Total==	> 1	4,575	0		14,575	20.11	. *	13,44	19.	82 *	0		0	0.0
nternal Load	s						*			*				
Lights		3,893	0		3,893	5.37	*	3,89	3 5.	74 *	0		0	0.0
People		2,922			2,922	4.03	*	1,39	2 2.	05 *	0		0	0.0
Misc	4	19,093	0	0	49,093	67.74	*	49,09	3 72.	39 *	0		0	0.0
Sub Total==	> !	55,908	0	0	55,908	77.14	, *	54,37	80.	18 *	0		0	0.
eiling Load		0	0		0	0.00	, *	(	0 0.	00 *	0		0	0.
utside Air		0	0	0	0	0.00	* (	(	0 0.	00 *	0		0	0.
up. Fan Heat					1,991	2.75	, *		0.	00 *			0	0.
et. Fan Heat			0		0	0.00	* (		0.	00 *			0	0.
uct Heat Pku	p		0		0	0.00	* (		0.	* 00			0	0.
V/UNDR Sizin	ıg	0			0	0.00	* (		0 0.	00 *	0		0	٥.
Exhaust Heat	-		0	0	0	0.00	* (		0.	.00 *			0	٥.
erminal Bypa	188		0	0	0	0.00	* (		0.	* 00			0	0.
							*			*				_
Frand Total==	;>	70,484	0	0	72,475	100.00	* 0	67,82	0 100.	.00 *	0		0	0.
			coo	LING COIL SE	LECTION									
To	tal Cap	acity	Sens Cap.	Coil Airfl		ng DB/W			g DB/WB/E		Gross Total		s (sf)	( =
(To	ons)	(Mbh)	(Mbh)	(cfm)	Deg F De	g F Gr	ains	-	g F Gra		Floor	861		
ain Clg 1	10.2	122.6	118.1	5,600	75.1 6	3.4	73.2			9.3	Part	501		
ux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0		0.0	ExFlr	62		
pt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	861		0
otals :	10.2	122.5									Wall	868	12	20
н	EATING C	OIL SEL	ECTION		AI	RFLOWS	(cfm)		ENGIN	EERING		TEMPERA		
Caj	pacity	Coil A	irfl Ent	Lvg	Туре	Coolin	g	Heating	Clg % O	A	0.0	Type	Clg	Ht
	(Mbh)	(cf	m) Deg I	Deg F	Vent .		0	0	Clg Cfm			SADB	63.6	(
ain Htg	-0.0		0 0.0	0.0	Infil	8	0	0	Clg Cfm			Plenum	75.0	(
ux Htg	0.0		0 0.0	0.0	Supply	5,60	0	0	Clg Sqf			Return	75.0	(
reheat	-376.3	5,	600 0.0	63.3	Mincfm		0	0	Clg Btu	h/Sqft		Ret/OA	75.0	
eheat	0.0		0 0.0	0.0	Return	5,60	0	0	No. Peo	ple		Runarnd	75.0	,
umidif	0.0		0 0.0	0.0	Exhaust		0	0	Htg 🐧 O.			Fn MtrTD	0.1	
pt Vent	0.0		0 0.0	0.0	Rm Exh		0	0	Htg Cfm	/SqFt		Fn BldTD	0.1	
Total	0.0				Auxil		0	0	Htg Btu	h/SqFt	0.00	Fn Frict	0.2	

247.79

Clg Btuh/Sqft 48.43 Ret/OA 76.9

130

1.00

Runarnd 75.0

Fn BldTD 0.4

Fn Frict 1.1

10.0 Fn MtrTD 0.5

70.

0.

ο.

0.0

-0.0

0.0

0.0

0.0

-319.2

Aux Htg

Preheat

Reheat

Humidif

Opt Vent

Total

0

0

0

0

7.670

0.0

63.3

0.0

0.0

0.0

0.0

55.6

0.0

0.0

0.0

Supply

Mincfm

Return

Exhaust

Rm Exh

Auxil

SZ - SINGLE ZONE Mo/Hr: 13/ 1 Mo/Hr: 7/15 Mo/Hr: 7/15 Peaked at Time ==> OADB: 3 OADB/WB/HR: 94/ 78/124.0 OADB: 94 Outside Air ==> Space Peak Coil Peak Percn Percnt * Net Percnt * Space Ret. Air Ret. Air Space Of Tot * Space Sens Tot Sens Of To Sensible Total Of Tot * Sensible Latent Sens.+Lat. (Btuh) (% (%) * (Btuh) (%) * (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) Envelope Loads 0.00 * 0.0 0 0 0 0.00 * 0 0 0 Skylite Solr 0.00 * 0 0.0 0 0.00 * 0 0 0 Skylite Cond -15,701 11.2 11.47 * -15,701 6.93 * 16.756 0 16.756 Roof Cond 16.756 19.44 * 0 0 0.0 0 28,392 11.74 * 28.392 28.392 Glass Solar 5.51 * -31,917 -31.917 22.7 8,047 3.33 * 8,047 8,047 0 Glass Cond -17.496 12.4 -17,496 2.59 * 3,786 1.57 * 3,786 0 Wall Cond 3,786 0 0.00 * 0 0.00 * 0 0 Partition -890 -890 0.6 0.00 * 0.00 * 0 0 Exposed Floor 0 -31,666 22.5 6.15 * -31,666 8,980 24,790 10.25 * 24,790 Infiltration -97,670 69.6 45.16 * -97,670 81,771 33.82 * 65,961 Sub Total ==> 81,771 Internal Loads 0.0 36.22 * 0 52,902 52,902 21.88 * 52,902 0 Lights 18.63 * 0 0 0.0 21.47 * 27,209 51,909 51,909 People 0.00 * 0 0.0 0.00 * 0 0 0 0 0 54.84 * 0 0.0 104,810 43.36 * 80.111 0 0 Sub Total ==> 104,810 0.00 * 0 0.0 0 0.00 * 0 0 0 0 Ceiling Load 0 -54,792 39.0 42,894 17.74 * 0.00 * 0 0 Outside Air 12.272 -8.7 5.08 * 0.00 * 12,272 Sup. Fan Heat 0.0 0 0.00 * 0.00 * 0 0 Ret. Fan Heat 0.0 0 0.00 * 0.00 * 0 0 Duct Heat Pkup -0.0 -0.00 * 0 -0.00 * OV/UNDR Sizing 0.0 0.00 * 0 0.00 * 0 Exhaust Heat 0 0.0 0.00 * 0.00 * Terminal Bypass -140.190 100.0 241,748 100.00 * 146,072 100.00 * -97,670 0 0 Grand Total==> 186,582 ------AREAS-----------COOLING COIL SELECTION-----Gross Total Glass (sf) (%) Leaving DB/WB/HR Entering DB/WB/HR Total Capacity Sens Cap. Coil Airfl 7,667 Deg F Deg F Grains Floor (Mbh) (cfm) Deg F Deg F Grains (Tons) (Mbh) 7,340 Part 7,670 76.9 64.6 76.2 55.6 47.4 38.0 267.1 371.3 Main Clg 30.9 16 0.0 ExFlr 0.0 0.0 0.0 0 0.0 0.0 0.0 0.0 0.0 Aux Clg 0 0.0 0.0 Roof 8.081 0.0 0.0 0 0.0 0.0 Opt Vent 0.0 0.0 0.0 728 2 3.510 Wall 371.3 Totals 30.9 --TEMPERATURES (F)--Type Clg Htg 10.0 Clg % OA Capacity Coil Airfl Ent Lvg Type Cooling Heating 57.1 1.00 SADB 82. 770 Clg Cfm/Sqft Deg F Deg F Vent 770 (cfm) (Mbh) 70. 247.89 Plenum 75.0 445 Clg Cfm/Ton 445 Main Htg -319.2 7.670 41.3 80.5 Infil Return 75.0 Clg Sqft/Ton

7,670

7.670

770

0

0

0

7,670

7.670

770

0

No. People

Htg Cfm/SqFt

Htg Btuh/SqFt -41.63

Htg % OA

System 4 Block VAVFSK - VAV WITH FORCED FLO SKIN

*****	*******	***** COC	DLING COIL	PEAK *****	*****	*****	****	*** CLG SP	ACE PE	AK *****	***** HEAT	ING COIL PE	AK ***	****
Peaked at		200	Mo/Hr: 7				*	Mo/Hr					0	
Outside A	ir ==>	OADI	B/WB/HR: 9	4/ 78/124.0			*	OADB	: 83	*		OADB: 0	)	
		_			¥7_4	Desent	*	Space	_	Percnt *	Space Pea	k Coil Pe	ak P	ercn
	<b>a</b>	Space		Ret. Air Latent	Total		*	Sensible		f Tot *	Space Sen	_		f To
		s,+Lat. (Btuh)	Sensible (Btuh)	(Btuh)	(Btuh)	(%)	*	(Btuh		(%) *	(Btuh		ih)	8)
Envelope 1		0	(	(200)	0		*	•	0	0.00 *		0	0	0.0
Skylite		0	0		0		*		0	0.00 *		0	0	0.0
Skylite Roof Co		29,417	0		29,417		*	20,77	7	10.98 *		0	0	0.0
Glass S		32,296	0		32,296	9.50	*	57,08	2	30.18 *		0	0	0.0
Glass C		8,302	0		8,302	2.44	*	3,17	2	1.68 *		0	0	0.0
Wall Co		7,396	0		7,396	2.17	*	5,22	4	2.76 *		0	0	0.0
Partiti		0	ū		0		*		0	0.00 *		0	0	0.0
		0			0	0.00	*		0	0.00 *		0	0	0.0
Exposed		38,183			38,183		*	5,55	57	2.94 *		0	0	0.0
Infiltr			0		115,594			91,81	11	48.54 *		0	0	0.0
Sub Tot		115,594	O		220,004		*	,		*				
Internal	Toggs	40 466	0		48,465	14.25	*	48,46	55	25.62 *		0	0	0.0
Lights		48,465	J		53,905			28,25		14.94 *		0	0	0.0
People		53,905	0	O	20,632			20,63		10.91 *		0	0	0.0
Misc		20,632	0		123,002			97,35		51.46 *		0	0	0.0
Sub Tot		0	0		0				0	0.00 *		0	0	0.0
Ceiling L		0	0		73,030				0	0.00 *		0	0	0.0
Outside A		U	V	ŭ	28,489					0.00 *			0	0.0
Sup. Fan			0		0					0.00 *			0	0.0
Ret. Fan			0		0					0.00 *			0	0.0
Duct Heat		0	v		0				0	0.00 *		0	0	0.0
OV/UNDR S	-	U	0	0	0					0.00 *			0	0.0
Exhaust F			0		c					0.00 *			0	0.0
Terminal	Вуравв		U	•			*			*				
Grand Tot	tal==>	238,596	0	0	340,115	100.00	*	189,1	63	100.00 *		0	0	0.0
			coc	LING COIL S	ELECTION							AREAS		
	Total Ca		Sens Cap.	Coil Airfl		lng DB/WB			ng DB/		Gross Tot		8 (8f)	(%)
	(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F De	eg F Gra	ins	Deg F D	eg F	Grains	Floor	14,142		
Main Clg	45.0	539.9	384.6	10,683	77.3	54.5 7	4.8	55.9	46.3	33.5	Part	9,258		
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	219		_
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	14,187		0
Totals	45.0	539.9									Wall	5,706	75	i1 :
	HEATING	COIL SEL	ECTION		A	IRFLOWS (	(cfm)		EN	GINEERING	CHECKS	TEMPER	ATURES	(F)-
	Capacity			Lvg	Туре	Cooling		Heating	Clg	% OA	11.8	Туре	Clg	Ht
	(Mbh)	(cf		=	Vent	1,270	)	0	Clg	Cfm/Sqft	0.76	SADB	58.4	0
Main Htg	0.0		0 0.0		Infil	664		0	Clg	Cfm/Ton	238.71	Plenum	75.0	0
Aux Htg	-275.7		240 20.		Supply	10,740		0	Clg	Sqft/Ton	314.32	Return	75.0	0
Preheat	-317.3		270 3.0		Mincfm		0	0	Clg	Btuh/Sqft	38.18	Ret/OA	77.3	0
Reheat	-0.0		0 0.0		Return	10,740		0	No.	People	135	Runarnd	75.0	0
Humidif	0.0		0 0.		Exhaust	1,27		0	Ħtg	% OA	0.0	Fn MtrTD	0.8	0
Opt Vent	0.0		0 0.		Rm Exh		0	0	Htg	Cfm/SqFt	0.00	Fn BldTD	0.6	0
Total	-593.0			• •	Auxil		0	3,240	Htg	Btuh/SqFt	-22.44	Fn Frict	1.9	0
20042	223.0													

System 5 Peak SZ - SINGLE ZONE

System	5	Peak	SZ	- SINGLE Z	UNE									
******	******	****** COX	OLING COIL	PEAK *****	******	*****	****	*** CLG S	PACE P	EAK *****	***** <u>HE</u> A	TING COIL	PEAK *	*****
Peaked at	Time **>		Mo/Hr: C	/ 0			*	Mo/H	r: 0/	0 *		Mo/Hr:	13/ 1	
Outside A	ir ==>	OADI	B/WB/HR:	0/ 0/ 0.0			*	OAD	B: 0	*		OADB:	3	
							*			*				
		Space	Ret. Air	Ret. Air	Net	Percnt	*	Spa	Ce	Percnt *	Space Pe	ak Coil	Peak	Percn
	Sen	ns.+Lat.	Sensible	Latent	Total	Of Tot	*	Sensib	le	Of Tot *	Space Se		Sens	Of To
Envelope	Loads	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)	*	(Btu	-	(%) *	(Btu		tuh)	(%
Skylite	Solr	0	0		0	0.00	*		0	0.00 *		0	0	0.0
Skylite	Cond	0	0		. 0	0.00			0	0.00 *		0	0	0.0
Roof Co	nd	0	0		0	0.00			0	0.00 *		0 -2:	2,251	12.9
Glass S	olar	0	0		0	0.00			0	0.00 *	-2,3		2,386	1.3
Glass C		0	0		0	0.00			0	0.00 *	-37.6		1,484	24.1
Wall Co	nđ	0	0		0	0.00			0	0.00 *	-37,0	0	0	0.0
Partiti	on	0			0	0.00			0	0.00 *	-11,0		1,066	6.4
Exposed	Floor	0			0	0.00			0	0.00 *	-47,1		7,107	27.4
Infiltr		0	_		0	0.00			0	0.00 *	-98,2		4,294	72.4
Sub Tot		0	0		0	0.00			U	*	30,2			
Internal	Loads		_			0.00	*		0	0.00 *		0	0	0.0
Lights		0	0		0				0	0.00 *		0	0	0.0
People		0		_	0				0	0.00 *		0	0	0.0
Misc		0	0	0	0				0	0.00 *		0	0	0.0
Sub Tot	al==>	0	0	0	0				0	0.00 *	-26,0		0	0.0
Ceiling L		0	0		0				0	0.00 *	2-7-		4,792	31.9
Outside A		0	0	0	0				•	0.00 *			7,402	-4.3
Sup. Fan			•		0					0.00 *			0	0.0
Ret. Fan			0		0					0.00 *			0	0.0
Duct Heat	-		0		0				0	0.00 *		0	0	-0.0
OV/UNDR S	-	0	0	0	0					0.00 *			0	0.0
Exhaust H			0	0	0					0.00 *			0	0.0
Terminal	Bypass		U	U	•	0.00	*			*				
Grand Tot	:al==>	0	0	0	o	0.00	<b>,</b> *		0	0.00 *	-124,	294 -17	1,685	100.0
			COO	LING COIL SI	LECTION	<b></b>						areas		
	Total C	apacity		Coil Airfl		ng DB/WE			lng DB,		Gross To	tal Gl	as <b>s</b> (s	f) (%)
	(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F De	g F Gra	ins	Deg F I	eg F	Grains	Floor	12,680		
Main Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Part	5,875		
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	199		
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	12,680		0
Totals	0.0	0.0									Wall	5,442		54
	HEATING	COIL SELE	CTION		A	RFLOWS (	(cfm)-		E	NGINEERING	CHECKS	TEMPI		S (F)
	Capacity	Coil Ai	rfl Ent	Lvg	Type	Cooling	<b>,</b>	Heating		% OA	0.0	Туре	Clg	
	(Mbh)	(cf	n) Deg F		Vent .	(	ס	770		Cfm/Sqft	0.00	SADB	0.	
Main Htg	-397.2	7,7	10 35.8	84.3	Infil		ס	662	_	Cfm/Ton	0.00	Plenum	0.	
Aux Htg	0.0	)	0 0.0	0.0	Supply		0	7,710		Sqft/Ton	0.00	Return	0.	
Preheat	-0.0	7,7	710 63.3	-0.9	Mincfm		0	0	_	Btuh/Sqft		Ret/OA	. 0.	
Reheat	0.0	)	0 0.0		Return		0	7,710		People	10.0	Runarno Fn Mtr		
Bumidif	0.0	)	0 0.0		Exhaust		0	770		& OA	10.0 0.61	Fn Mtr.		. 2 0.
Opt Vent	0.0		0 0.0	0.0	Rm Exh		0	0	_	Cfm/SqFt		Fn Fri		.7 0.
Total	-397.2	2			Auxil	,	0	0	нгд	Btuh/SqFt	-31.32			

6 Block VAVFSK - VAV WITH FORCED FLO SKIN

	71-a>		Mo/Hr:	7/15			*	Mo/H	r: 7/	15 *	1	Mo/Hr: 0	/ 0	
Peaked at 1		OADI		94/ 78/124.0			*	OADI		*			0	
Outside Ai	T #=>	ORDI	D/WD/DK:	947 767124.0			*	-		*				
		Space	Ret. Air	Ret. Air	Net	Percnt	*	Spa	ce	Percnt *	Space Peak	Coil P	eak	Percn
	Sens	.+Lat.	Sensible	Latent	Total	Of Tot	*	Sensib	le	Of Tot *	Space Sens	Tot S	ens	Of To
Snvelope L		(Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)	*	(Btu	h)	(*) *	(Btuh)	(Bt	uh)	(%
Skylite :		0	0	,	, ,	0.00	*		0	0.00 *	0		0	0.0
Skylite (		0	0		0	0.00	*		0	0.00 *	0		0	0.0
Roof Con		20,501	0		20,501	13.10	*	20,5	01	22.51 *	0		0	0.0
Glass So.		1,326	0		1,326	0.85	*	1,3	26	1.46 *	0		0	0.0
Glass Co		666	0		666	0.43	*	6	66	0.73 *	0		0	0.0
Wall Con		3,929	0		3,929	2.51	*	3,9	29	4.31 *	0		0	0.0
Partitio		0			0	0.00	*		0	0.00 *	0		0	0.0
Exposed :		0			0	0.00	*		0	0.00 *	0		0	0.0
Infiltra		15,929			15,929	10.18	*	5,5	90	6.14 *	0		0	0.0
Sub Tota		42,351	0		42,351	27.07	*	32,0	12	35.15 *	0		0	0.0
Sub 10ta Internal L		,	·				*			*				
Lights		42,376	0		42,376	27.08	*	42,3	76	46.53 *	0		0	0.0
People		9,175	·		9,175	5.86		4,3		4.72 *	0		0	0.0
Misc		12,378	0	. 0	12,378	7.91	*	12,3	78	13.59 *	0	1	0	0.0
	1>	63,929	c		63,929			59,0		64.85 *	o	ı	0	0.0
Sub Tota		03,929	c		0				0	0.00 *	o		0	0.0
Ceiling Lo Outside Ai		0	C		40,253				0	0.00 *	o	1	0	0.0
Sup. Fan H		·	•	_	9,930					0.00 *			0	0.0
Ret. Fan H			c	)	0		, *			0.00 *			0	0.0
ouct Heat					0		, *			0.00 *			0	0.0
	-	0	·		0				0	0.00 *	c	)	0	0.0
OV/UNDR Si Exhaust He	-	Ū	c	) 0	0	0.00	, *			0.00 *			0	0.0
					c	-0.00	) *			0.00 *			0	0.
Terminal E	ypass		Ì	,			*			*				
Grand Tota	1==>	106,279	C	0	156,462	100.00	* (	91,0	066	100.00 *	C	)	0	0.
				OLING COIL S	ELECTION							AREAS-		
	Total Ca		Sens Cap.	Coil Airfl		ing DB/W				/WB/HR	Gross Total	l Gla	ss (st	E) (%
	(Tons)	(Mbh)	(Mbh)	(cfm)		g F Gr				Grains	Floor 1	3,222		
-4- 61-	21.8	261.8	192.6	5,032	-	-	75.9	56.1	46.1	32.7	Part	7,668		
ain Clg ux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	132		
-	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	9,887		0
pt Vent otals	21.8	261.8		_							Wall	2,225		60
ОСАТВ	21.0	201.0												
	HEATING	COIL SEL	ECTION		A	IRFLOWS	(cfm)		E	NGINEERING		TEMPER		
	Capacity	Coil A	irfl Ent	Lvg	Type	Coolin	g	Heating	_	% OA	13.9	Туре	Clg	Ht.
	(Mbh)	(cf	m) Deg	F Deg F	Vent .	70	0	0		Cfm/Sqft	0.38	SADB	50.	
lain Htg	0.0		0 0.	0.0	Infil	27	7	0	-	Cfm/Ton	230.65	Plenum	75.	
ux Htg	-111.3	1,	980 38.	1 91.0	Supply	5,03	2	0	-	Sqft/Ton	606.05	Return	75.	
reheat	-183.6		700 3.	0 56.1	Mincfm		0	0	_	Btuh/Sqft		Ret/OA	77.	
Reheat	-0.0		0 0.	0.0	Return	5,03	2	0	No.	People	15	Runarnd	75.	
Rumidif	0.0		0 0.	0.0	Exhaust	70	0	0	Htg	* OA	0.0	Fn MtrT		
Opt Vent	0.0		0 0.	0.0	Rm Exh		0	0	Ħtg	Cfm/SqFt	0.00	Fn BldTI		
							0	1,980		Btuh/SqF	-13.89	Fn Frict	1.	4

System 7 Peak SZ - SINGLE ZONE

*****		(00						*	Mo/HI	: 7/	18 *		Mo/Hr: 13/ 1		
Peaked at T	ime ==>		Mo/Hr:					*	OADE				OADB: 3		
Outside Air	==>	OADB	/WB/HR:	93/	77/124.1			*			*				
				-		Net	Perc	nt. *	Spac	:e	Percnt *	Space Pea	k Coil Peak	Pe	ercn
		Space	Ret. Ai		Latent	Total			Sensibl	.e	Of Tot *	Space Sen	s Tot Sens	of	To
		+Lat.	Sensibl		(Btuh)	(Btuh)		<b>%</b> ) *	(Btul	1)	(%) *	(Btub	) (Btuh)		₹}
Envelope Lo		(Btuh)	(Btuh	•	(Bcun)	(204)		.00 *	•	0	0.00 *		0		0.0
Skylite S	olr	0		0				.00 *		0	0.00 *		0	)	0.0
Skylite C	ond	0		0		17,412		.27 *	16,00	3	19.62 *	-15,47	2 -15,47	2	5.3
Roof Cond	;	17,412		0		9,098		85 *	8,70		10.67 *		0	5	0.0
Glass Sol	ar	9,098		0		4,47		.38 *	3,9	30	4.82 *	-17,34	12 -17,34		5.9
Glass Con		4,471		0		10,71		.71 *	13,8		17.00 *	-37,77	77,77	7	12.9
Wall Cond		10,713		0				.00 *		0	0.00 *		0	0	0.0
Partition		0					-	.00 *		0	0.00 *	-12,9	02 -12,90	2	4.4
Exposed F	loor	0				27,57		.69 *	11,2	19	13.75 *	-52,6	58 -52,65	8	18.1
Infiltrat	-	27,574				59,26		.89 *	53,7		65.87 *	-136,1	50 ~136,15	0	46.8
Sub Total	*=>	69,268		0		69,20	0 30				*	1			
Internal Lo	ads						1 3	.66 *	7,7	41	9.49		0	0	0.0
Lights		6,881		0		6,88			10,3		12.74	•	0	0	0.0
People		1,600				1,68		•••	9,3		11.45		0	0	0.0
Misc		4,134		0	0	4,13					33.69	•	0	0	0.0
Sub Total	l==>	12,695		0	0	12,69		5.76 *	27,4		0.00		0	0	0.0
Cailing Lo	ad	0		0			-	.00 *		0	0.00		0 -170,70	31	58.7
Outside Ai:	ī	0		0	0	89,43		7.63 *		0		*	16,0		-5.5
Sup. Fan H	eat					16,00		3.52 *				*	,	0	0.0
Ret. Fan H	eat			0				.00 *			0.00	*		0	0.0
Duct Heat				0			0 (	.00 *			0.00	*	0	0	-0.0
OV/UNDR Si		366				30	56	0.19 *	;	366	0.43	*	V	0	0.0
Exhaust He				0	0		0	0.00 *			0.00	*		0	0.0
Terminal B				0	0		0	0.00 *			0.00	*		•	
								*					150 -290,9	31	100.0
Grand Tota	]==>	82,328		0	0	187,7	58 10	0.00 *	81,	567	100.00	* -136,	150 -250,5		
													areas		
				COOLI	NG COIL SE					4 5	m /5/m /1179	Gross To			(%)
	Total Ca	pacity	Sens Cap	р. С	oil Airfl			B/WB/HR			B/WB/HR Grains	Floor	7,501		
	(Tons)	(Mbh)	(Mbh)		(cfm)	-	-	Grains		55.8		Part	9,162		
Main Clg	46.9	562.6	392.	0	12,000	78.7	70.1	102.8	67.3 0.0	0.0		ExFlr	232		
Aux Clg	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0		Roof	7,963		0
Opt Vent	0.0	0.0	0.	0	0	0.0	0.0	0.0	0.0	0.0	•	Wall	6,222	39	96
Totals	46.9	562.6													
									,		ENGINEERI	NG CHECKS	TEMPERA	TURES	(F)
	HEATING	COIL SEI	ECTION						)		g % OA	20.0	Type	Clg	Ħtg
	Capacity	Coil A	Airfl E	nt	Lvg	Type		oling	Heating		lg Cfm/Sqf		SADB	68.6	80.
	(Mbh)	(c1	(m) De	g F	Deg F	Vent	7	2,400	2,400		lg Cfm/Ton		Plenum	75.0	70.
Main Htg	-438.8	12,	,000 4	5.0	79.4	Infil		740	740		lg Sqft/To		Return	75.0	70.
Aux Htg	0.0			0.0	0.0	Supply	17	2,000	12,000		lg Btuh/Sq		Ret/OA	78.7	
Preheat	-136.9	12		6.6	67.3	Mincfm		0			o. People	75	Runarnd	75.0	70.
Reheat	0.0			0.0	0.0	Return		2,000	12,000		tg % OA	20.0	Fn MtrTD	0.4	0.
Humidif	0.0		0	0.0	0.0	Exhaust	ì	2,400	2,400		tg Cfm/SqF		Fn BldTD	0.3	0.
Opt Vent	0.0		0	0.0	0.0	Rm Exh Auxil		0	0		tg Btuh/Sq		Fn Frict	0.9	0.

MAIN SYSTEM COOLING - ALTERNATIVE 1
BLDG 2100 BASERUN - FT LEONARD WOOD

(Main System)

					<b>_</b>			Space							coil		
		•	eak	01		m S1	upp.	Space	Space	Space	Peak	(	OA Rm	Supp.	Coil	Coil	Coil
				Cond			Dry	Air	Sens.	Lat.	Time	Con	d. Dry	Dry	Air	Sens.	Lat.
				DB/WI		-	Bulb	Flow	Load	Load	Mo/Br	DB/	WB Blb	Bulb	Flow	Load	Load
Room			)/ BI		) (F		(F)	(Cfm)	(Btuh)	(Btuh)		(	F) (F)	(F)	(Cfm)	(Btuh)	(Btuh)
Number	Descri	peron		``	, (-	,	(-,		, .								
	BONTE	OFFICES	7/15	94 7	R 7	5 !	58.9	12,530	213,804	58,344	7/15	94	78 75	58.9	19,769	404,927	105,373
Zone		Total/Ave.	.,	94 7			58.9	12,530	213,804	58,344		94	78 75	58.9	19,769	404,927	105,373
Zone	_		7/15	94 7		5	58.9	12,530	213,804	58,344	7/15	94	78 75	58.9	19,769	404,927	105,373
System		Total/Ave.		94 7	8 7	5	58.9	12,530	213,804	58,344		94	78 75	58.9	19,769	404,927	105,373
System			7/15	94 7	8 7	75	58.9	12,530	213,804	58,344	7/15	94	78 75	58.9	19,769	404,927	105,373 2,664
2			9/15	83 7	0	75	63.6	5,600	67,820	2,664	9/15	83	70 75	63.6	5,600	69,811	2,664
Zone	2	Total/Ave.		83 7	0	75	63.6	5,600	67,820	2,664		83	70 75	63.6	5,600	69,811	2,664
Zone	2	Block	9/15	83 7	0	75	63.6	5,600	67,820	2,664	9/15		70 75	63.6	5,600	69,811	2,664
System	2	Total/Ave.		83 7	0	75	63.6	5,600	67,820	2,664		83	70 75	63.6	5,600	69,811	2,664
System	2	Block	9/15	83 7	0	75	63.6	5,600	67,820	2,664			70 75	63.6	5,600	69,811 173,882	67,866
3	ASSEM	BLY HALL	7/15	94 7	8	75	57.1	7,670	146,072	40,510			78 75		7,670	173,882	67,866
Zone	3	Total/Ave.		94 7	18	75	57.1	7,670	146,072	40,510		94	78 75		7,670 7,670	173,882	67,866
Zone	3	Block	7/15	94	78	75	57.1	7,670	146,072	40,510			78 75		7,670	173,882	67,866
System	3	Total/Ave.		94	78	75	57.1	7,670	146,072	40,510		94	78 75 78 75		7,670	173,882	67,866
System	3	Block	7/15	94 ′	78	75	57.1	7,670	146,072	40,510			78 75		10,683	242,279	97,836
4	MEDIC	AL CLINIC	9/15	83	70	75	58.4	12,690	223,505	37,440		94 94			10,683	242,279	97,836
Zone	4	Total/Ave.		83	70	75	58.4	12,690	223,505	37,441				-	10,683	242,279	97,836
Zone	4	Block	9/15	83	70	75	58.4	12,690	223,505	37,44		94			10,683	242,279	97,836
System	4	Total/Ave.		83	70	75	58.4	12,690	223,505	37,44		-			10,683	242,279	97,836
System	4	Block	9/15	83		75	58.4	10,740	189,163	37,44					5,032	115,121	41,341
6	OFFIC	ES-STORE	7/15	94		75	58.0	7,010	126,861	15,21 15,21		94			5,032	115,121	41,341
Zone	6	Total/Ave.		94		75	58.0	7,010	126,861	15,21					5,032	115,121	41,341
Zone	6	Block	7/15	94		75	58.0	7,010	126,861	15,21	-	94			5,032	115,121	41,341
System	6	Total/Ave.		94		75	58.0	7,010	126,861 91,066	15,21		-			5,032	115,121	41,341
System		Block	7/15	94		75	58.0	5,032	81,567	19,93					12,000	130,816	56,942
7		EL-AUDTRM	7/18			75	68.6	12,000	81,567	19,93		93			12,000	130,816	56,942
Zone	7			89		75	68.6 68.6	12,000	81,567	19,93		_			12,000	130,816	56,942
Zone	7	Block	7/18			75 75	68.6	12,000	81,567	19,93		9:			12,000	130,816	56,942
System				89	-			12,000	81,567	•	1 7/1				12,000	130,816	56,942
System	1 <b>7</b>	Block	7/18	89	/5	75	68.6	12,000	01,557	,	,-	-					

MAIN SYSTEM HEATING - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

PEAK HEATING LOADS-----

(Main System)

									- Space								Coil		
				Peak		oa	Rr	n	Supp.	Space	Space	Peal	k	O	A	Rm	supp.	Coil	Coil
				Time			Dry		Dry	Air	Sens.	Tim	е	Cond	•	Dry	Dry	Air	Sens.
			Floor				B11	-	Bulb	Flow	Load	Mo/H	r	DB/W	B	Blb	Bulb	Flow	Load
Room			Area	Mo/Hr						(Cfm)	(Btuh)			(F	)	(F)	(F)	(Cfm)	(Btuh)
Number	Desc	ription	(Sq Ft)		(	F)	(F	)	(F)	(CLM)	(=,								
					3		1 7	^	82.0	7,670	-97,670	13/	1	3	1	70	82.0	7,670	-140,190
3	ASSEM	BLY HALL	7,667	13/ 1					82.0	7.670	-97,670			3	1	70	82.0	7,670	-140,190
Zone	3	Total/Ave.	7,667		3		1 7			7,670	-97,670	13/	1	3	1	70	82.0	7,670	-140,190
Zone	3	Block	7,667	13/ 1	. 3		1 7		82.0	•	-97,670		_	3	1	70	82.0	7,670	-140,190
System	3	Total/Ave.	7,667		3		1 7	0	82.0	7,670	- •	11/		3	1		82.0	7,670	-140,190
System	3	Block	7,667	13/ 1	. 3		1 7	0	82.0	7,670	-97,670	13/		3	1		85.2	7,710	-171,685
5,500	CLOTH	ING ISSUE	12,680	13/ 1	. 3		1 7	0	85.2	7,710	-124,294	13/	1	-			85.2	7,710	-171,685
-		Total/Ave.	12,680		3		1 7	0	85.2	7,710	-124,294			3	1			•	-171,685
Zone	_		12,680	13/	. 3		1 7	70	85.2	7,710	-124,294	13/	1	3	1	70	85.2	7,710	•
Zone		Block		20,	3		1 7	70	85.2	7,710	-124,294			3	1	70	85.2	7,710	~171,685
System	5	Total/Ave.	12,680		_		_	70	85.2	7,710	-124,294	13/	1	3	1	70	85.2	7,710	-171,685
System	5	Block	12,680	13/			_			12,000	-136,150		1	3	1	70	80.7	12,000	-290,931
7	CHAPI	EL-AUDTRM	7,501	13/	1 3	•		70	80.7					3	1	70	80.7	12,000	-290,931
Zone	7	Total/Ave.	7,501		3	i	1 7	70	80.7	12,000	-136,150				1			12.000	-290,931
Zone	7	Block	7,501	13/	1 3	ı	1 7	70	80.7	12,000	-136,150		1	_				12,000	-290,931
	7	Total/Ave.	7,501		2	3	1 .	70	80.7	12,000	-136,150			3	1			•	-290,931
System System	7	Block	7,501	13/	1 3	3	1	70	80.7	12,000	-136,150	13/	1	3	1	70	80.7	12,000	-230,931

AUXILIARY SYSTEM HEATING - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

PEAK HEATING LOADS ------(Auxiliary System)

									8220								Coil		
				Peak	. <b></b>	Oř		Rm	Space Supp.	Space	Space	Pea)		0	A	Rm	Supp.	Coil	Coil
			Floor	Time		cond.		Dry	Dry	Air	Sens.	Time	•	Cond		Dry	Dry	Air	Sens.
			Area	Mo/H		DB/WI		B1b	Bulb	Flow	Load	Mo/H	5	DB/W	B	Blb	Bulb	Flow	Load
Room Number	Desc	ription	(Sq Ft)	1107111		(F)		(F)	(F)	(Cfm)	(Btuh)		(	F)	(F)		(F)	(Cfm)	(Btuh)
Mumor	Desc.	p							•							70	80.8	12,870	-147,860
1	ADMIN	OFFICES	18,716	13/	1	3	1	70	80.8	12,870	-147,860	13/	L	3	1	70	80.8	12,870	-147,860
Zone	1	Total/Ave.	18,716			3	1	70	80.8	12,870	-147,860			3	1	70	80.8	12,870	-147,860
Zone	1	Block	18,716	13/	1	3	1	70	80.8	12,870	-147,860	13/	1	3	1		80.8	12,870	-147,860
System	1	Total/Ave.	18,716			3	1	70	80.8	12,870	-147,860			3	1		80.8	12,870	-147,860
System	1	Block	18,716	13/	1	3	1	70	80.8	12,870	-147,860	13/		3	1	70		3,240	-103,645
4	MEDIC	AL CLINIC	14,142	13/	1	3	1	70	100.1	3,240	-103,645	13/	1	3	1		100.1	3,240	-103,645
Zone	4		14,142			3	1	70	100.1	3,240	-103,645			3	1		100.1	3,240	-103,645
Zone	4	Block	14,142	13/	1	3	1	70	100.1	3,240	-103,645	13/	1	3	1	70	100.1	•	-103,645
System	4		14,142			3	1	70	100.1	3,240	-103,645			3	1		100.1	3,240	-103,645
System		Block	14,142	13/	1	3	1	70	100.1	3,240	-103,645	13/	1	3	1			3,240	
System 6	-	ES-STORE	13,222	13/	1	3	1	70	91.0	1,980	-44,236	13/	1	3	1			1,980	-44,236
-		Total/Ave.	13,222			3	1	70	91.0	1,980	-44,236			3	1	70	91.0	1,980	-44,236
Zone	6		13,222	13/	1	3	1	70	91.0	1,980	-44,236	13/	1	3	1	70	91.0	1,980	-44,236
Zone	-	Total/Ave.	13,222			3	1	70	91.0	1,980	-44,235			3	1	70	91.0	1,980	-44,236
System System	6		13,222	13/	1	3	1	70	91.0	1,980	-44,236	13/	1	3	1	70	91.0	1,980	-44,236

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

(At time of Coil Peak)

		Lights	Lights			Misc.	Misc.	Misc. Ret. Air Misc.	
		Room	Ret. Air Lites	People	People Peopl	Space	Space	sensible CLF	Total
Room		Sensible	Sensible CLF	Sensible	Latent CLF	Sensible	Latent	(Btuh)	(Btuh)
Number	Description	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(scuir)	(22,
				•			0	0 1.000	259,241
1	ADMIN OFFICES	81,309	0 0.970	25,480	22,400 0.950	130,052	0	0 1.000	259,241
Zone	1 Total/Ave.	81,309	0 0.970	25,480	22,400 0.950	130,052	0	0 1.000	259,241
Zone	1 Block	81,309	0 0.970	25,480	22,400 0.950	130,052	0	0 1.000	259,241
System	1 Total/Ave.	81,309	0 0.970	25,480	22,400 0.950	130,052	0	0 1.000	259,241
System	1 Block	81,309	0 0.970	25,480	22,400 0.950	130,052	0	0 1.000	55,908
2	COMPUTER ROOM	3,893	0 0.970	1,392	1,530 0.955	49,093	0	0 1.000	55,908
Zone	2 Total/Ave.	3,893	0 0.970	1,392	1,530 0.955	49,093	0	0 1.000	55,908
Zone	2 Block	3,893	0 0.970	1,392	1,530 0.955	49,093	0	0 1.000	55,908
System	2 Total/Ave.	3,893	0 0.970	1,392	1,530 0.955	49,093	0	0 1.000	55,908
System	2 Block	3,893	0 0.970	1,392	1,530 0.955	49,093	_	0 0.000	104,810
3	ASSEMBLY HALL	52,902	0 1.000	27,209	24,700 0.951	0	0	0 0.000	104,810
Zone	3 Total/Ave.	52,902	0 1.000	27,209	24,700 0.951	0	0		104,810
Zone	3 Block	52,902	0 1.000	27,209	24,700 0.951	0	0	0 0.000	
System	3 Total/Ave.	52,902	0 1.000	27,209	24,700 0.951	0	0	0 0.000	104,810
System	3 Block	52,902	0 1.000	27,209	24,700 0.951	0	0	0 0.000	104,810
3 y 5 c 6 iii		48,465	0 1.000	28,256	25,650 0.951	20,632	0	0 0.790	123,002
Zone	4 Total/Ave.	48,465	0 1.000	28,256	25,650 0.951	20,632	0	0 0.790	123,002
Zone	4 Block	48,465	0 1.000	28,256	25,650 0.951	20,632	0	0 0.790	123,002
	4 Total/Ave.	48,465	0 1.000	28,256	25,650 0.951	20,632	0	0 0.790	123,002
System	4 Block	48,465	0 1.000	28,256	25,650 0.951	20,632	0	0 0.790	123,002
System 5	OFFICES-STORE	42,376	0 0.970	4,300	4,875 0.956	12,378	0	0 0.850	63,929
-	6 Total/Ave.	42,376	0 0.970	4,300	4,875 0.956	12,378	0	0 0.850	63,929
Zone	6 Block	42,376	0 0.970	4,300	4,875 0.956	12,378	0	0 0.850	63,929
Zone	6 Total/Ave.	42,376	0 0.970	4,300	4,875 0.956	12,378	0	0 0.850	63,929
System	6 Block	42,376	0 0.970	4,300	4,875 0.956	12,378	0	0 0.850	63,929
System 7		6,881	0 0.160	630	1,050 0.064	4,134	0	0 0.270	12,695
	7 Total/Ave.	6,881	0 0.160	630	1,050 0.064	4,134	0	0 0.270	12,695
Zone	7 Block	5,881	0 0.160	630	1,050 0.064	4,134	0	0 0.270	12,695
Zone		6,881	0 0.160	630	1,050 0.064	4,134	0	0 0.270	12,695
System		6,881	0 0.160	630	1,050 0.064	4,134	0	0 0.270	12,695
System	7 Block	0,081	0 0.100	330					

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

INTERNAL COOLING LOADS------(At time of Space Peak)

Misc. Misc. Misc. Lights Lights Ret. Air Misc. Space People Peopl Space People Ret. Air Lites Room Total Latent Sensible CLF Sensible Latent CLF Sensible Sensible Sensible CLF Room (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) Number Description 0 1.000 259,241 0 130,052 22,400 0.950 0 0.970 25,480 81,309 1 ADMIN OFFICES 259,241 0 1.000 n 130,052 22,400 0.950 0 0.970 25,480 81,309 1 Total/Ave. Zone 259,241 0 1.000 0 22,400 0.950 130,052 25,480 0 0.970 81.309 1 Block Zone 0 1.000 259,241 0 130,052 22,400 0.950 0 0.970 25,480 1 Total/Ave. B1,309 System 259,241 0 0 1.000 22,400 0.950 130,052 25.480 0 0.970 81,309 1 Block 55,908 0 1.000 0 1,530 0.955 49,093 1,392 3,893 0.0.970 2 COMPUTER ROOM 0 1.000 55,908 0 49,093 1,392 1,530 0.955 0 0.970 3,893 2 Total/Ave. Zone 0 1.000 55,908 0 49,093 1,530 0.955 1,392 0 0.970 3.893 2 Block Zone 55,908 0 1.000 49,093 0 1.530 0.955 0 0.970 1,392 2 Total/Ave. 3,893 System 0 1.000 55,908 1,530 0.955 49,093 0 0 0.970 1,392 3.893 2 Block System 0 0.000 104,810 0 0 24,700 0.951 0 1.000 27,209 3 ASSEMBLY HALL 52,902 0 0.000 104,810 0 0 24,700 0.951 27.209 0 1.000 52,902 Zone 3 Total/Ave. 104.810 0.000 24,700 0.951 0 27,209 0 1.000 52,902 Zone 3 Block 104,810 0.000 0 0 27,209 24,700 0.951 0 1.000 3 Total/Ave. 52,902 System 0 0.000 104,810 0 0 27,209 24,700 0.951 0 1.000 52,902 System 3 Block 123,002 0 0 0.790 20,632 25,650 0.951 0 1.000 28,256 48.465 4 MEDICAL CLINIC 0 0.790 123,002 0 25,650 0.951 20.632 28,256 0 1.000 4 Total/Ave. 48,465 Zone 0 0.790 123,002 0 20,632 25,650 0.951 28,256 48,465 0 1.000 Zone 4 Block 123,002 0 0 0.790 20,632 25,650 0.951 28,256 0 1.000 48,465 4 Total/Ave. System 123,002 0 0.790 0 20,632 0 1.000 28,256 25,650 0.951 48,465 4 Block System 63,929 0 0.850 0 12,378 4.875 0.956 4,300 0 0.970 42.376 6 OFFICES-STORE 63,929 0 0.850 12,378 0 4,875 0.956 0 0.970 4,300 42.376 6 Total/Ave. Zone 63,929 0 0.850 12,378 0 4,875 0.956 42,376 0 0.970 4,300 6 Block 63,929 0 0.850 4,875 0.956 12,378 0 4.300 0 0.970 42,376 System 6 Total/Ave. 0 0.850 63,929 0 4,875 0.956 12,378 4,300 42,376 0 0.970 System 6 Block 37.976 0 0.610 10,395 10,500 0.796 9,340 0 0.180 7,741 7 CHAPEL-AUDTRM 37,976 0 0.610 9,340 10,395 10,500 0.796 0 0.180 7,741 7 Total/Ave. Zone 37,976 0 0.610 0 9,340 10.500 0.796 10,395 0 0.180 7.741 Zone 7 Block 37,976 Ω 0 0.610 9,340 10,500 0.796 0 0.180 10,395 7,741 System 7 Total/Ave. 37,976 0 0.610 9,340 10,500 0.796

10,395

0 0.180

7,741

7 Block

System

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE COOLING LOADS-----(Roof - Skylight)

(At time of Coil Peak)

				(A:	t time	of Coll Peak)			Skylight		skylight		
		Roof		Roof				#17 #		skylt	Space	Skylt	
		Return Air	Roof	Space	Roof	Skylight			Return Air Conduction	R.A.	Conduction	Space	
		Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Load	CLTD	Load	CLTD	
Room		Load	CLTD	Load	CLTD	Solar	Solar	CLF	(Btuh)	(F)	(Btuh)	(F)	
Number	Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btun)	(1)	(2,		
							_		0	0.0	o	0.0	
1	ADMIN OFFICES	0	0.0	38,808	71.5	О	0	0.000	0	0.0	o	0.0	
Zone	1 Total/Ave.	0	0.0	38,808	71.5	0	0	0.000	0	0.0	o	0.0	
Zone	1 Block	0	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0	
System	1 Total/Ave.	0	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0	
System	1 Block	0	0.0	38,808	71.5	0		0.000	0	0.0	0	0.0	
2	COMPUTER ROOM	0	0.0	1,261	50.5	0	0	0.000	0	0.0	0	0.0	
Zone	2 Total/Ave.	0	0.0	1,261	50.5	0	•	0.000	0	0.0	0	0.0	
Zone	2 Block	0	0.0	1,261	50.5	0	0		0	0.0	0	0.0	,
System	2 Total/Ave.	0	0.0	1,261	50.5	0	0	0.000	0		0	0.0	,
System	2 Block	0	0.0	1,261	50.5	0	0	0.000	0		0	0.0	,
3		0	0.0	16,756	71.5	0	0	0.000	0		0		
Zone	3 Total/Ave.	0	0.0	16,756	71.5	0	0	0.000	=		0		
Zone	3 Block	0	0.0	16,756	71.5	0	0		0		_		
System	3 Total/Ave.	О	0.0	16,755	71.5	0	0		0		-		
System	3 Block	0	0.0	16,756	71.5	o	0						
2 y 8 C 6 16 4	MEDICAL CLINIC	0	0.0	29,417	71.5	0	0		_				
Zone	4 Total/Ave.	. 0	0.0	29,417	71.5	0	C		_				
Zone	4 Block	0	0.0	29,417	71.5	. 0	C		_			0.0	
System	4 Total/Ave.	. 0	0.0	29,417	71.5	0	C		_	-		0.0	
System	4 Block	o	0.0	29,417	71.5	0	(				,	0.0	
6	OFFICES-STORE	C	0.0	20,501	71.5	0	(		-		,	0.0	
Zone	6 Total/Ave		0.0	20,501	71.5	0	(	-	,	0.0	,	0.0	
Zone	6 Block	c	0.0	20,501	71.5	. 0	(		•	0.0	•	0.0	
System	6 Total/Ave		0.0	20,501	71.5	0		0.000	,	0.0	,	0 0.1	
System		C	0.0	20,501	71.5	, 0		0.000		-	•	0 0.	
7		(	0.0	17,412	2 75.4	, 0		0.00	•	0 0.0	,	0 0.	
Zone	7 Total/Ave		0.0	17,412	2 75.4	. 0		0.00	•	0 0.0	9	o o.	
Zone	7 Block		0.0	17,41	2 75.4	. 0		0.00	•	0 0.	0	0 0.	
System			0.0	17,41	2 75.4	<b>,</b> 0		0.00	•	0 0.	•	0 0.	
System			0.0	17,41	2 75.	4 0		0.00	0	0 0.	U		,
ayacen	, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,												

------BUILDING ENVELOPE COOLING LOADS-----(Wall - Window)

(At time of Coil Peak)

Glass Glass Glass Glass Glass Glass Glass Wall Wall Wall Wall Space Space Return Air R.A. Space Return Air Solar Space Space Plenum Plenm Solar CLF Conduction CLTD Conduction CLTD Load CLTD Load CLTD Solar (Btuh) (F) Room (Btuh) (F) (Btuh) (Btuh) (Btuh) (F) (Btuh) (F) Number Description 7,032 17.8 0.0 0 0.550 10,402 14.3 24,812 1 ADMIN OFFICES 0.0 7,032 17.8 0 0.0 0 0.550 24,812 10,402 14.3 0 0.0 1 Total/Ave. 0 0.0 Zone 7,032 17.8 24,812 0 0.550 10,402 14.3 0.0 1 Block 0.0 Zone 7,032 17.8 0 0.550 24,812 10,402 14.3 0 0.0 1 Total/Ave. 0.0 System 0 7,032 17.8 0 0.550 24,812 10,402 14.3 1 Block System

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS------

(Wall - Window) (At time of Coil Peak)

			W-11	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass	
			Wall	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.	
			Plenum	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD	
Room			Load	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)	
Number	Descr	lption	(Btuh)	(1)	(Doan,		• •							
			0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0	
2		TER ROOM	0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0	
Zone	2		0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0	
Zone	2	Block	0	0.0	564	8.2	10,440	0	0.790	507	6.8	o	0.0	
System	2	Total/Ave.	0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0	
System		Block	0	0.0	3,786	14.5	28,392	0	0.580	8,047	17.8	0	0.0	
3		BLY HALL	0		3,786	14.5	28,392	0	0.580	8,047	17.8	0		
Zone	3		0		3,786	14.5	28,392	0	0.580	8,047	17.8	0		
Zone	3	Block	0		3,786	14.5	28,392	0	0.580	8,047	17.8	0	0.0	)
System	3	Total/Ave.	0		3,786	14.5	28,392	0	0.580	8,047	17.8	0	0.0	)
System	3		0		7,396	16.0	32,296	0	0.570	8,302	17.8	0	0.0	j
4		CAL CLINIC	0		7,396	16.0	32,296	0	0.570	8,302	17.8	0	0.0	)
Zone	4	Total/Ave.			7,396	16.0	32,296	c	0.570	8,302	17.8	0	0.0	)
Zone	4	Block			7,396	16.0	32,296	c	0.570	8,302	17.8	0		
System	4	Total/Ave. Block			7,396		32,296	c	0.570	8,302	17.8	· c		
System	4	CES-STORE			3,929		1,326	C	0.640	666	17.8	C		
- 6	6		,		3,929		1,326	C	0.640	666	17.8	, (	0.0	0
Zone	_			0.0	3,929		1,326	(	0.640	666	17.8	) (	0.0	0
Zone	6			0.0	3,929		1,326	. (	0.640	666	17.8	3	0.	0
System	6			0.0	3,929		1,326	,	0.640	666	5 17.6	) (	0.	0
System	6			0.0	10,713		9,098		0.750	4,47	18.2	2 (	0.	0
7		EL-AUDTRM		0.0	10,713		9,098		0.750	4,47	1 18.2	2	0.	0
Zone		Total/Ave.		0.0	10,713		9,098		0.750	4,47	1 18.	2	0.	0
Zone	7			0.0	10,713		9,098		0.750	4,47	1 18.	2	0.	0
System				0.0	10,713		9,098		0 0.750	4,47	1 18.	2	0 0.	0
System	. 7	Block		0.0	10,71		-,							

BUILDING ENVELOPE COOLING LOADS-----(Exposed Floor - Partitions - Infiltration)

(At time of Coil Peak)

			Exposed	Expsd						Plenm	Ceiling	
			Floor	Floor	Partition	Part.	Infilt.	Infilt.	Infilt.	Dry B	Sensible	Envelope
Room			Sensible	CLTD	Sensible	CLTD	Airflow	Sensible	Latent	Temp.	Load	Total
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Cfm)	(Btuh)	(Btuh)	(F)	(Btuh)	(Btuh)
1	ADMIN	OFFICES	0	0.0	0	0.0	963	19,433	35,944	75.0	0	136,430
_		Total/Ave.	0	0.0	0	0.0	963	19,433	35,944	75.0	0	136,430
Zone			0	0.0	0	0.0	963	19,433	35,944	75.0	0	136,430
Zone		Block			0	0.0	963	19,433	35,944	75.0	0	136,430
System	1	Total/Ave.	0	0.0	-		963	19,433	35,944	75.0	0	136,430
System	1	Block	0	0.0	0	0.0		670	1,134	75.0	0	14,575
2	COMPU	TER ROOM	0	0.0	0	0.0	80				0	14,575
Zone	2	Total/Ave.	0	0.0	0	0.0	80	670	1,134			
Zone	2	Block	0	0.0	0	0.0	80	670	1,134	75.0	0	14,575
			0	0.0	0	0.0	80	670	1,134	75.0	0	14,575
System System		Total/Ave. Block	0		0		80	670	1,134	75.0	0	14,575

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)

(At time of Coil Peak)

Room Number	Descr	iption	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Etuh)	Envelope Total (Btuh)
			0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
3		BLY HALL	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
Zone	_	Total/Ave.	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
Zone	3	Block	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
System	3	Total/Ave.	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
System	3	Block	-	0.0	0	0.0	664	13,399	24,784	75.0	o	115,594
4		AL CLINIC	0		0	-	664	13,399	24,784	75.0	0	115,594
Zone	4	Total/Ave.	0		0		664	13,399	24,784	75.0	0	115,594
Zone	4	Block	0				664	13,399	24,784	75.0	0	115,594
System	4	Total/Ave.	0		0		664	13,399	24,784	75.0	0	115,594
System	4	Block	0		0		277	5,590	10,339	75.0	0	42,351
6	OFFIC	ES-STORE	0	0.0	0			•	10,339		o	42,351
Zone	6	Total/Ave.	0	0.0	0		277	5,590	10,339		0	42,351
Zone	6	Block	C	0.0	0	0.0	277	5,590	•		0	42,351
System	6	Total/Ave.	C	0.0	0	0.0	277	5,590	10,339		0	42,351
System	6	Block	C	0.0	0	0.0	277	5,590	10,339		0	69,268
7	CHAP	L-AUDTRM	c	0.0	C	0.0	740	14,402	13,172		0	69,268
Zone		Total/Ave.	(	0.0	c	0.0	740	14,402	13,172			69,268
Zone	7		(	0.0	c	0.0	740	14,402	13,172		0	69,268
System		Total/Ave.	(	0.0	C	0.0	740	14,402	13,172		0	69,268
System			(	0.0	C	0.0	740	14,402	13,172	75.0	0	69,200

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS-----(Roof - Skylight)

(At time of Space Peak)

					(A	t time	or Space Peak)					nh14 m/- 4	
			Roof		Roof					Skylight		Skylight	Charle
			Return Air	Roof	Space	Roof	Skylight	Skylight	_	Return Air	Skylt	Space	Skylt
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space CLTD
Room			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	
Number	D	escription	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
114		•				•						0	0.0
1	ADMIN	OFFICES	0	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0
Zone		Total/Ave.	0	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0
Zone		Block	О	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0
System		Total/Ave.	0	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0
System		Block	0	0.0	38,808	71.5	0	0	0.000	0	0.0	0	0.0
2		ER ROOM	0	0.0	1,251	50.5	0	0	0.000	0	0.0	0	0.0
Zone	2	Total/Ave.	0	0.0	1,261	50.5	0	0	0.000	0	0.0	0	
Zone	2	Block	0	0.0	1,261	50.5	0	0	0.000	0	0.0	0	
System	2	Total/Ave.	0	0.0	1,261	50.5	0	0	0.000	0		0	
System	2	Block	0	0.0	1,261	50.5	0	0	0.000	0		0	-
3	ASSEMI	BLY HALL	0	0.0	16,756	71.5	0	0	0.000	0		0	
Zone	3	Total/Ave.	0	0.0	16,756	71.5	0	0	0.000	0		-	
Zone	3	Block	0	0.0	16,756	71.5	0	0	0.000	0		0	
System	3	Total/Ave.	0	0.0	16,756	71.5	0	0	0.000	O		0	
System	3	Block	0	0.0	16,756	71.5	0	0	0.000			0	
4		AL CLINIC	0	0.0	20,777	50.5	. 0	O	0.000				
Zone	4	Total/Ave.	0	0.0	20,777	50.5	0	C	0.000				
Zone	4	Block	o	0.0	20,777	50.5	. 0	C	0.000				
System	4	Total/Ave.	. 0	0.0	20,777	50.5	, 0	C	0.000				
System	4	Block	0	0.0	20,777	50.5	, 0	(	0.000	, (			
6		ES-STORE	0	0.0	20,501	71.5	, 0	(	0.000	, (	0.0		
Zone	6		. 0	0.0	20,501	71.5	5 0	(	0.000	, ,	0.0		0.0
Zone	6	Block	o	0.0	20,501	71.5	0	(	0.000	) (	0.0		0.0
System	6	Total/Ave		0.0	20,501	71.5	5 0	(	0.000	)	0.0		0.0
System	_	Block	c	0.0	20,501	71.5	5 0	(	0.000	)	0 0.0		0.0
7		L-AUDTRM	c	0.0	16,003	69.3	3 0	(	0.000	י	0 0.0		0.0
Zone		Total/Ave		0.0	16,00	69.	3 0		0.000	)	0 0.	•	0.0
Zone	7			0.0	16,00	3 69.	3 0		0.000	ס	0 0.	•	0.0
System				0.0	16,00	69.	3 0		0.00	-	0 0.	-	0.0
System	·-		-	0.0	16,00	3 69.	3 0		0.00	0	0 0.	0	0.0
System													

BUILDING ENVELOPE COOLING LOADS-----(Wall - Window)

(At time of Space Peak)

Glass Glass Glass Glass Glass Glass Glass Wall Wall Wall Wall Space Space Return Air R.A. Space Return Air Solar Space Space Plenum Plenm Solar CLF Conduction CLTD Conduction CLTD Load CLTD Solar Load Room (Btuh) (Btuh) (Btuh) (F) (Btuh) (Btuh) (F) (Btuh) (F) Number Description 7,032 17.8 0 0.0 0 0.550 24,812 10,402 14.3 1 ADMIN OFFICES 0.0 0.0 0 0.550 7,032 17.8 0 10,402 14.3 24,812 0.0 1 Total/Ave. 0 Zone 0.0 0 0.550 7,032 17.8 0 24,812 10,402 14.3 0.0 1 Block Zone 0.0 0 0.550 7,032 17.8 0.0 10,402 14.3 24,812 System 1 Total/Ave. 0 0.0 0 0.550 7,032 17.8 0 0.0 10,402 14.3 24,812 System 1 Block

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

(At time of Space Peak)

			Wall	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Plenum	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
_			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room		1_4.4 a.m	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Descr	iption	(200)	(- /	, ,	• • •							
2	CONTIL	TER ROOM	0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0
-		Total/Ave.	0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0
Zone	2	Block	0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0
Zone System	2		0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0
System	2	Block	0	0.0	564	8.2	10,440	0	0.790	507	6.8	0	0.0
ау <b>а се</b> м 3		BLY HALL	0	0.0	3,786	14.5	28,392	0	0.580	8,047	17.8	0	0.0
Zone		Total/Ave.	0	0.0	3,786	14.5	28,392	0	0.580	8,047	17.8	0	0.0
Zone	3		0	0.0	3,786	14.5	28,392	o	0.580	8,047	17.8	0	
System	_	Total/Ave.	0	0.0	3,786	14.5	28,392	0	0.580	8,047	17.8	0	0.0
System		Block	0	0.0	3,786	14.5	28,392	0	0.580	8,047	17.8	0	
2 y 8 C 6 // 4	_	CAL CLINIC	0	0.0	5,224	11.3	57,082	0	0.690	3,172		0	
Zone	4		0	0.0	5,224	11.3	57,082	0	0.690	3,172		0	
Zone	4	Block	0	0.0	5,224	11.3	57,082	0	0.690	3,172		0	
System	4		0	0.0	5,224	11.3	57,082	0	0.690	3,172		0	
System	4		0	0.0	5,224	11.3	57,082	0	0.690	3,172		0	
5 y 5 C 6 16	_	ES-STORE	o	0.0	3,929	17.5	1,326	C	0.640	666		0	
Zone	6		o	0.0	3,929	17.5	1,326	c	0.640	666		, c	
Zone	6	Block	c	0.0	3,929	17.5	1,326	c	0.540			C	
System			c	0.0	3,929	17.5	1,326		0.640				
System		Block	c	0.0	3,929	17.5	1,326					_	
7		EL-AUDTRM	C	0.0	13,870	24.6	8,702	;					
Zone		Total/Ave.	c	0.0	13,870	24.6	8,702	·	0.720				
Zone	7	Block	C	0.0	13,870	24.6	8,702		0.720				
System	7	Total/Ave.	C	0.0	13,870	24.6	8,702	. (	0.720				
System		Block	(	0.0	13,870	24.6	8,702	: (	0.720	3,930	16.0	)	0.0
-1-50													

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)
(At time of Space Peak)

Room Number	Descr	iption	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
		OFFICES	0	0.0	o	0.0	963	19,433	35,944	75.0	0	136,430
1			0	0.0	0		963	19,433	35,944	75.0	0	136,430
Zone		Total/Ave.	0	0.0	0		963	19,433	35,944	75.0	0	136,430
Zone	1		=		0		963	19,433	35,944	75.0	0	136,430
System	1	Total/Ave.	0	0.0			963	19,433	35,944	75.0	0	136,430
System	1	Block	0	0.0	0			-	1,134	75.0	0	14,575
2	COMPU	TER ROOM	0	0.0	0	0.0	80	670			0	14,575
Zone	2	Total/Ave.	0	0.0	0	0.0	80	670	1,134	75.0		
		Block	0	0.0	0	0.0	80	670	1,134	75.0	0	14,575
Zone			0		0	0.0	80	670	1,134	75.0	0	14,575
System	2	Total/Ave.	=				80	670	1,134	75.0	0	14,575
System	2	Block	0	0.0	0	0.0	80	070	2,200			

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)
(At time of Space Peak)

Room			Exposed Floor Sensible	Floor	Partition Sensible	CLTD	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(CIM)	(Bean)	(=,	, ,		
			_	0.0	0	0.0	445	8,980	15,810	75.0	o	81,771
3		BLY HALL	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
Zone	3	Total/Ave.	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
Zone	3	Block	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
System	3	Total/Ave.	0	0.0	0	0.0	445	8,980	15,810	75.0	0	81,771
System	3	Block	0		0		664	5,557	11,796	75.0	0	103,608
4		AL CLINIC Total/Ave.	0		0		664	5,557	11,796	75.0	0	103,608
Zone	4		0		0	0.0	664	5,557	11,796	75.0	0	103,608
Zone	4	Block	0		0		664	5,557	11,796	75.0	0	103,608
System	4		0		0		664	5,557	11,796	75.0	0	103,608
System	4	Block	0		0		277	5,590	10,339	75.0	0	42,351
6		ES-STORE	0		0		277	5,590	10,339	75.0	0	42,351
Zone	6	Total/Ave.	0		0		277	5,590	10,339	75.0	0	42,351
Zone	6	Block	c		c		277	5,590	10,339	75.0	0	42,351
System	6	Total/Ave.			c		277	5,590	10,339	75.0	0	42,351
System	6	Block					740	11,219	9,431	75.0	0	63,156
7		EL-AUDTRM	(		(		740	11,219	9,431	75.0	0	63,156
Zone	7		(				740	11,219	9,431	75.0	0	63,156
Zone	7		(			-	740	11,219	9,431		0	63,156
System	7	Total/Ave.		0.0		0.0		11,219	9,431		0	63,156
System	. 7	Block	(	0.0	(	0.0	740	11,619	5,43.	,,,,,	•	,

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

(Roof - Skylight)

(At time of Coil Peak)

					(A	C CIMe (	or corr rem,			Skylight		Skylight	
		Return Sensi	ble	Roof R.A. CLTD	Roof Space Sensible Load	Roof Space	Skylight Return Air Solar	Skylight Space Solar	skylt solar CLF	Return Air Conduction Load	skylt R.A. CLTD	Space Conduction Load	Skylt Space CLTD
Room Number	Descri		oad .uh)	(F)	(Btuh)	. (F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
			0	0.0	-15,701	-67.0	o	0	0.000	0	0.0	0	0.0
3	ASSEMBLY H				-15,701		o	0	0.000	0	0.0	0	0.0
Zone	3 Total	/Ave.	0	0.0			0	0	0.000	0	0.0	0	0.0
Zone	3 Bloc)	:	0	0.0	-15,701		0	0	0.000	0	0.0	0	0.0
System	3 Tota	/Ave.	0	0.0	-15,701			0		0	0.0	0	0.0
System	3 Block	ς .	0	0.0	-15,701		0		0.000	0	0.0	0	0.0
- 5	CLOTHING I	SSUE -22	,251	-60.5	0	-67.0	0			0	0.0	0	0.0
Zone	5 Tota	1/Ave22	,251	-60.5	0	-67.0	0	=	0.000	0		0	0.0
Zone	5 Bloc	k -22	,251	-60.5	0	-67.0	0	0		-		0	
System	5 Tota		,251	-60.5	0	-67.0	0	0		0		0	
-	5 Bloc		,251		0	-67.0	0	0	0.000				
System -		-	0		-15,472	-67.0	0	0	0.000	0		0	-
7	CHAPEL-AUD		0	0.0	-15,472		0	C	0.000	0	0.0	0	
Zone	7 Tota		0		-15,472		0	c	0.000	0	0.0	0	
Zone	7 Bloc		_		-15,472		_	c	0.000	C	0.0	O	0.0
System	7 Tota	1/Ave.	0	0.0			_	(	0.000	·	0.0	C	0.0
System	7 Bloc	k	0	0.0	-15,472	-67.0	v	·					

BUILDING ENVELOPE HEATING LOADS-----

(Wall - Window)

(At time of Coil Peak)

					Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Wall	Wall			Space	Return Air	Solar	Space	Space	Return Air	R.A.
			Plenum	Plenm	Space	Space	•	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room			Load	CLTD	Load	CLTD	Solar		CDr		(F)	(Btuh)	(F)
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(+)	(200)	ζ- /
3	AGGEMI	BLY HALL	0	0.0	-17,496	-67.0	0	0	0.000	-31,917		0	0.0
•			0	0.0	-17,496	-67.0	0	0	0.000	-31,917	-67.0	0	0.0
Zone		Total/Ave.	=		-17,496		0	0	0.000	-31,917	-67.0	0	0.0
Zone	3	Block	0	0.0			0	0	0.000	-31,917	-67.0	0	0.0
System	3	Total/Ave.	0	0.0	-17,496			_	0.000	-31,917	-67.0	0	0.0
System	3	Block	0	0.0	-17,496	-67.0	0	0				0	0.0
5	CI.OTH	ING ISSUE	-3,822	-60.5	-37,662	-67.0	0	0	0.000	-2,386			
		Total/Ave.	-3,822	-60.5	-37,662	-67.0	0	0	0.000	-2,386	-67.0	О	
Zone	-			-60.5	-37,662		0	0	0.000	-2,386	-67.0	0	0.0
Zone	5	Block	-3,822				0	0	0.000	-2,386	-67.0	0	0.0
System	5	Total/Ave.	-3,822	-60.5	-37,662		-			-2,386		0	0.0
System	5	Block	-3,822	-60.5	-37,662	-67.0	0	o		-		0	0.0
7	CHAPE	L-AUDTRM	0	0.0	-37,777	-67.0	0	0	0.000	-17,342		-	
•			0	0.0	-37,777	-67.0	0	0	0.000	-17,342	-67.0	0	
Zone	7	Total/Ave.			•		0	0	0.000	-17,342	-67.0	0	0.0
Zone	7	Block	0		-37,777			_	0.000	-17,342		0	0.0
System	7	Total/Ave.	0	0.0	-37,777	-67.0	0			-17,342		o	0.0
System	7	Block	0	0.0	-37,777	-67.0	0	0	0.000	-17,342	-37.0		***

(Exposed Floor - Partitions - Infiltration)

(At time of Coil Peak)

Room Number	Description	Exposed Floor Sensible (Btuh)			Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	-	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
3	ASSEMBLY HALL	-890	-67.0	0	0.0	445	-31,666	0	70.0	0	-97,670

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

(Exposed Floor - Partitions - Infiltration)

(At time of Coil Peak)

Room Number	Descr	iption	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
	3	Total/Ave.	-890	-67.0	0	0.0	445	-31,666	0	70.0	0	-97,670
Zone	3	Block	-890	-67.0	0	0.0	445	-31,666	0	70.0	0	- <b>97,67</b> 0
Zone	3	Total/Ave.	-890	-67.0	0	0.0	445	-31,666	0	70.0	0	-97,670
System	•	Block	-890	-67.0	0	0.0	445	-31,666	0	70.0		-150,367
System			-11,066		0	0.0	662	-47,107	0	63.5	-26,073	
5		ING ISSUE	-11,066		0	0.0	662	-47,107	0	63.5	-26,073	-150,367
Zone		Total/Ave.	-11,066		0	0.0	662	-47,107	0	63.5	-26,073	-150,367
Zone		Block			0		662	-47,107	0	63.5	-26,073	-150,367
System		Total/Ave.	-11,066		0		662	-47,107	0	63.5	-26,073	-150,367
System	-	Block	-11,066		0		740	-52,658	0	70.0	0	-136,150
7	CHAPI	L-AUDTRM	-12,902		-		740	-52,658	0	70.0	0	-136,150
Zone	7	Total/Ave.	-12,902		0		740	-52,658	c	70.0	0	-136,150
Zone	7	Block	-12,902	-67.0	O			-52,658	C	70.0	0	-136,150
System	7	Total/Ave.	-12,902	-67.0	c		740	•			0	-136,150
System	7	Block	-12,902	-67.0	C	0.0	740	-52,658		0.0		

HEATING LOADS AT AUX COIL PEAK - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

(Roof - Skylight)

(At time of Auxiliary Coil Peak)

					(At time	a or wa	Allialy Coll	,				Skylight	
			Roof		Roof					Skylight			
			Return Air	Roof	Space	Roof	Skylight	skylight	Skylt	Return Air	Skylt	Space	Skylt
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space
				CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLID
Room			Load				(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Des	scription	(Btuh)	(F)	(Btuh)	(F)	(Beam)	(2.00)					
							0	0	0.000	0	0.0	0	0.0
1	ADMIN O	FFICES	0	0.0	-36,365		=	0	0.000	0	0.0	0	0.0
Zone	1 T	otal/Ave.	0	0.0	-36,365	-67.0	0	-		0	0.0	0	0.0
Zone		lock	0	0.0	-36,365	-67.0	0	0	0.000	0	0.0	0	0.0
System		otal/Ave.	o	0.0	-36,365	-67.0	0	0	0.000	_		0	0.0
-		lock	0	0.0	-36,365	-67.0	0	0	0.000	0	0.0	-	
System	_		0	0.0	-27,565	-67.0	0	0	0.000	0		0	
•		CLINIC	0	0.0	-27,565		0	0	0.000	0	0.0	0	
Zone		otal/Ave.			-27,565		0	0	0.000	0	0.0	0	0.0
Zone	4 E	lock	0	0.0			0	0	0.000	0	0.0	0	0.0
System	4 7	Cotal/Ave.	0	0.0	-27,565			0		0	0.0	0	0.0
System	4 F	Block	0	0.0	-27,565		0	_	_	0	0.0	0	0.0
- 6	OFFICES	S-STORE	0	0.0	-19,210	-67.0		C				c	0.0
Zone	6 3	Total/Ave.	0	0.0	-19,210	-67.0	0	c					
Zone		Block	0	0.0	-19,210	-67.0	0	C	0.000	C			
		Total/Ave.	0	0.0	-19,210	-67.0	0	(	0.000	·			
System			0		-19,210		. 0	(	0.000	, (	0.0		0.0
System	6	Block	U	0.0	13,210								

(At time of Auxiliary Coil Peak)

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
1	ADMIN OFFICES	0	0.0	-48,735	-67.0	0	0	0.000	-27,893	-67.0	0	0.0
_	1 Total/Ave.	0	0.0	-48,735		0	0	0.000	-27,893	-67.0	0	0.0
Zone Zone	1 Block	0	0.0	-48,735	-67.0	0	0	0.000	-27,893	-67.0	0	0.0
	1 Total/Ave.	0	0.0	-48,735	-67.0	0	О	0.000	-27,893	-67.0	0	
System	1 Block	0	0.0	-48,735	-67.0	0	0	0.000	-27,893	-67.0	0	
System 4	MEDICAL CLINIC	0	0.0	-30,971		0	0	0.000	-32,929	-67.0	0	
_	4 Total/Ave.	0		-30,971		0	0	0.000	-32,929	-67.0	0	
Zone	4 Block	0		-30,971		0	0	0.000	-32,929	-67.0	0	
Zone	4 Total/Ave.	0		-30,971		0	0	0.000	-32,929	-67.0	0	
System		0		-30,971		0	0	0.000	-32,929	-57.0	0	
8ystem -	4 Block	0		-15,042		0	0	0.000	-2,643	-67.0	0	0.0
6	OFFICES-STORE	0		-15,042		0	0	0.000	-2,643	-67.0	0	0.0
Zone	6 Total/Ave.	0		-15,042		0	0	0.000	-2,643	-67.0	o	0.0
Zone	6 Block	0		-15,042		0	. 0	0.000	-2,643	-67.0	o	0.0
System System	6 Total/Ave. 6 Block	0		-15,042		o		0.000	~2,643	-67.0	d	0.0

BUILDING ENVELOPE HEATING LOADS-----

(Exposed Floor - Partitions - Infiltration)

(At time of Auxiliary Coil Peak)

Room Numb <del>e</del> r	Description	Exposed Floor Sensible (Btuh)	-	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
1	ADMIN OFFICES	-34,867	-67.0	0	0.0	963	-68,526	0	70.0	o	-216,386

,

•

HEATING LOADS AT AUX COIL PEAK - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE HEATING LOADS-----

(Exposed Floor - Partitions - Infiltration)
(At time of Auxiliary Coil Peak)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				_		963	-68,526	0	70.0	0	-216,386
Zone	1 Total/Av	e34,867	-67.0	0	0.0		-68,526	0	70.0	0	-216,386
Zone	1 Block	-34,867	-67.0	0	0.0	963	•	0		0	-216,386
System	1 Total/Av	e34,867	-67.0	0	0.0	963	-68,526	0		0	-216,386
System	1 Block	-34,867	-67.0	0	0.0	963	-68,526			0	-150,894
4	MEDICAL CLINIC	-12,179	-67.0	0	0.0	664	-47,249	0		0	-150,894
Zone	4 Total/Av		-67.0	0	0.0	664	-47,249	0		0	-150,894
	4 Block	-12,179		0	0.0	664	-47,249	0			
Zone				0	0.0	664	-47,249	0	70.0	0	-150,894
System				0	0.0	664	-47,249	0	70.0	0	-150,894
System	4 Block	-12,179		0		277	-19,711	0	70.0	0	-63,947
6		-7,341		-		277	-19,711	O	70.0	O	-63,947
Zone	6 Total/A	re7,341		0		277	-19,711	c	70.0	0	-63,947
Zone	6 Block	-7,341	-67.0	C				ď		0	-63,947
System	6 Total/A	ve7,343	-67.0	C	0.0	277	-19,711	-		0	-63,947
System		-7,34	-67.0	C	0.0	277	-19,711	(	, ,0.0	· ·	30,000

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

(Roof - Skylight) (At time of Space Peak)

				(A)	C CIME (	or apace roun,			skylight		Skylight	
		Roof Return Air	Roof	Roof	Roof	Skylight Return Air	Skylight Space	Skylt Solar	Return Air Conduction	skylt R.A.	Space Conduction	Skylt Space
		Sensible	R.A.	Sensible	-•		Solar	CLF	Load	CLTD	Load	CLTD
Room		Load	CLTD	Load	CLTD	Solar			(Btuh)	(F)	(Btuh)	(F)
Number	Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(20411)	` '	•	
		0	0.0	-15,701	-67.0	О	0	0.000	0	0.0	0	0.0
3	ASSEMBLY HALL		0.0	-15,701		0	0	0.000	0	0.0	0	0.0
Zone	3 Total/Ave.	0				0	0	0.000	0	0.0	0	0.0
Zone	3 Block	0	0.0	-15,701		0	0	0.000	0	0.0	0	0.0
System	3 Total/Ave.	0	0.0	-15,701		0	0	0.000	0	0.0	0	0.0
System	3 Block	0	0.0	-15,701		_	0		o	0.0	0	0.0
- 5	CLOTHING ISSUE	-22,251	-60.5	0	-67.0	0			0	0.0	0	0.0
Zone	5 Total/Ave.	-22,251	-60.5	0	-67.0	0	0		0		0	0.0
_	5 Block	-22,251	-60.5	0	-67.0	0	0		_		0	
Zone			-60.5	0	-67.0	0	0	0.000	0			
System	5 Total/Ave.		-60.5	0	-67.0	0	0	0.000	0	0.0	0	
System	5 Block	-22,251				0	0	0.000	0	0.0	0	0.0
7	CHAPEL-AUDTRM	0	0.0	-15,472	-	0	c	0.000	0	0.0	0	0.0
Zone	7 Total/Ave.	0	0.0	-15,472		-	c		0	0.0	c	0.0
Zone	7 Block	0	0.0	-15,472	-67.0	0	_		_	0.0	c	0.0
System	7 Total/Ave.	0	0.0	-15,472	-67.0	О	C					0.0
System	7 Block	0	0.0	-15,472	-67.0	0	C	0.000	, c	0.0		

BUILDING ENVELOPE HEATING LOADS------(Wall - Window)

(At time of Space Peak)

					Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Wall	Wall		Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
			Plenum	Plenm	Space	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room			Load	CLTD	Load			(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Bcuir)		<b>(</b> ,	•		
								0	0.000	-31,917	-67.0	0	0.0
3	ASSEM	BLY HALL	0	0.0	-17,496	-67.0	0			-31,917	-67.0	0	0.0
Zone	3	Total/Ave.	0	0.0	-17,496	-67.0	0	_	0.000			0	0.0
	-	Block	0	0.0	-17,496	-67.0	0	0	0.000	-31,917	-67.0		
Zone			0	0.0	-17,496	-67.0	0	0	0.000	-31,917	-67.0	0	0.0
System		Total/Ave.	_		-17,496		0	0	0.000	-31,917	-67.0	0	0.0
System	3	Block	0				0	0	0.000	-2,386	-67.0	0	0.0
5	CLOTH	ING ISSUE	-3,822		-37,662					-2,385		0	0.0
Zone	5	Total/Ave.	-3,822	-60.5	-37,662		0	_		-2,386		0	0.0
Zone	5	Block	-3,822	-60.5	-37,662	-67.0	0			-		0	0.0
System	5	Total/Ave.	-3,822	-60.5	-37,662	-67.0	0	0		-2,386		0	
•	5		-3,822	-60.5	-37,662	-67.0	0	0	0.000		-67.0		
System	-		0,020		-37,777		0	0	0.000	-17,342	-67.0	0	
7		EL-AUDTRM	-		-37,777		0	0	0.000	-17,342	-67.0	0	0.0
Zone	7	Total/Ave.	0				0	_	0.000	-17,342	-67.0	0	0.0
Zone	7	Block	0	0.0	-37,777		-	_			-67.0	0	0.0
System	7	Total/Ave.	0	0.0	-37,777	-67.0	0	_				o	0.0
System	_	Block	0	0.0	-37,777	-67.0	О	, с	0.000	-17,342	-37.0	-	

------BUILDING ENVELOPE HEATING LOADS-----

(Exposed Floor - Partitions - Infiltration)

(At time of Space Peak)

Room Number	Description	Exposed Floor Sensible (Btuh)		Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	_	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
3	ASSEMBLY HALL	-890	-67.0	o	0.0	445	-31,666	0	70.0	0	-97,670

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

(Exposed Floor - Partitions - Infiltration)

(At time of Space Peak)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				_		445	-31,666	0	70.0	0	-97,670
Zone	3 Total/Ave.	-890	-67.0	0	0.0	445	-31,666	0	70.0	О	-97,670
Zone	3 Block	-890	-67.0	0	0.0	445	-31,666	0	70.0	0	-97,670
System	3 Total/Ave.	-890		0	0.0	445	-31,666	0	70.0	0	-97,670
System	3 Block	-890		0	0.0	445 662	-47,107	0	63.5	-26,073	-150,367
5	CLOTHING ISSUE	-11,066	-67.0	0	0.0	562	-47,107	0	63.5	-26,073	-150,367
Zone	5 Total/Ave.	-11,066	-67.0	0	0.0		-47,107	0	63.5	~26,073	-150,367
Zone	5 Block	-11,066	-67.0	0	0.0	662	-47,107	0	63.5	-26,073	-150,367
System	5 Total/Ave.	-11,066	-67.0	0		662	•	0	63.5	-26,073	-150,367
System	5 Block	-11,066	-67.0	0	0.0	662	-47,107	0		0	-136,150
7	CHAPEL-AUDTRM	-12,902	-67.0	0	0.0	740	-52,658	0		0	-136,150
Zone	7 Total/Ave.	-12,902	-67.0	C	0.0	740	-52,658			0	-136,150
Zone	7 Block	-12,902	-67.0	C	0.0	740	-52,658	0		0	-136,150
-	7 Total/Ave.	-12,902	-67.0	c	0.0	740	-52,658	C		<u>-</u>	-136,150
System System		-12,902		C	0.0	740	-52,658	C	70.0	0	-138,130

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD

AIRFLOW COOLING LOADS -----(At time of Coil Peak)

			Ventilation		Onti	onal Ventila	ation		- Bypass		
			Ventilation		Opti	Ona±					Ov/Undr
			Sensible	Latent A	Hrflow	Sensible	Latent 1	Airflow	Sensible	Latent	Sizing
Room		Airflow	(Btuh)	(Btuh)	(Cfm)	(Btuh)	(Btuh)	(Cfm)	(Btuh)	(Btuh)	(Btuh)
Number	Description	on (Cfm)	(Bean)	(Beam)		, ,					
		. 260	25,426	47,029	0	0	0	0	0	0	o
1	ADMIN OFFICES	1,260	25,426	47,029	0	0	0	0	0	0	-123,523
Zone	1 Total/Ave		25,426	47,029	0	0	0	0	0	0	0
Zone	1 Block	1,260 a. 1,260	25,426	47,029	0	0	0	0	0	0	-123,523
System	1 Total/Av	1,260	25,426	47,029	0	0	0	0	0	0	0
System	1 Block	0	0	0	0	0	0	0	0	0	0
2	COMPUTER ROOM		0	0	0	0	0	0	0	0	0
Zone	2 Total/Av	e. 0	0	0	0	0	0	0	0	0	0
Zone	2 Block		0	0	0	0	0	0	0	0	0
System	2 Total/Av	e. 0	0	0	0	0	0	0	0	0	0
System	2 Block	770	15,538	27,356	0	0	0	0	0	0	0
3				27,356	0	0	0	0	0	0	0
Zone	3 Total/Av		•	27,356	0	0	0	0	0	0	0
Zone	3 Block	770		27,356	0	0	0	0	0	0	0
System	3 Total/A			27,356	0	0	0	0	0	0	0
System	3 Block	770		47,402	0	0	0	0	0	0	0
4	MEDICAL CLINIC			47,402		0	0	0	0	0	34,342
Zone	4 Total/A					0	0	. 0	0	0	0
Zone	4 Block	1,270		47,402		0	C	. 0	0	0	34,342
System				47,402 47,402		0	c	0	0	0	0
System		1,270		26,127	_		c	, 0	0	0	О
6		700		26,127	_		(	0	0	0	35,795
Zone	6 Total/A			26,127			(	) 0	0	0	0
Zone	6 Block	700		26,127			(	) 0	0	0	35,795
System	6 Total/A			26,127			(		C	0	0
System		700				_		, ,	. 0	0	366
7	CHAPEL-AUDTRE			42,720		_		- D C	. 0	o	366
Zone	7 Total/A			42,720	•			0 (		0	366
Zone	7 Block	2,40		42,720				0 (	0	0	365
System				42,720		_		0 (	0	0	366
System	n 7 Block	2,40	0 46,710	42,720	, (	,					

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

(At time of Coil Peak)

			Venti	lation	Op.	Vent	Re	heat	Hum:	idif	
				Sensible		Sensible	Airflow	Sensible	Airflow	Latent	Total
ROOM			Airflow		(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Btuh)
Number		Description	(Cfm)	(Btuh)	(CIM)	(202)	0	0	0	0	-54,792
3	assem	BLY HALL	770	-54,792		0	0	0	0	0	-54,792
Zone	3	Total/Ave.	770	-54,792	0	-	_	0	_	0	-54,792
Zone	3	Block	770	-54,792	0	0	_	0		0	-54,792
System	3	Total/Ave.	770	-54,792	0	0		=	_	0	-54,792
System	3	Block	770	-54,792	0	0	0	0	_	0	-54,792
5	СГОТН	ING ISSUE	770	-54,792	0	o	0	0	_	=	-54,792
Zone		Total/Ave.	770	-54,792	0	0	0	C		0	•
		Block	770	-54,792	0	0	0	c	0	0	-54,792
Zone			770	-54,792		0	0	c	0	0	-54,792
System	-	Total/Ave.		-54,792		c	. 0	C	0	0	-54,792
System	5	Block	770	•	_	c	. 0		0	0	-170,781
7	CHAPE	L-AUDTRM	2,400	-170,781	_	_	_		0	0	-170,781
Zone	7	Total/Ave.	2,400	-170,781	. 0	ď			0	0	-170,781
Zone	7	Block	2,400	-170,781	. 0	C			-	0	-170,781
System	7	Total/Ave.	2,400	-170,781	. 0	(	0		0	•	-170,781
System	7	Block	2,400	-170,781	. 0	(	) 0	)	0 0	0	-170,781

COOLING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

								Cooling						
		-						System				Run		System
			Duct	Supply	Return	System Exhaust		_	Exhaust	Ducted	Plenum	Around	Corridr	Return
			Heat	Fan	Fan	Heat Loss	Total	Airflow	Airflow	Airflow				
Room			Pickup	Reat		(Btuh)	(Btuh)	(Cfm)		(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
Number	I	escription	(Btuh)	(Btuh)	(Btuh)		(2011)	, ,	•					
			0	42,174	0	0	42,174	1,260	0	19,769	0	0		•
		OFFICES	0	42,174	0	0	42,174	1,260	0	19,769	0	0		•
Zone		Total/Ave.	0	42,174	0	0	42,174	1,260	0	19,769	0			•
Zone		Block	0	42,174	0	0	42,174	1,260	) O	19,769	0			•
System	1	Total/Ave. Block	0	42,174	0	O	42,174	1,260	) (	19,769				•
System 2	1 COMPLE	TER ROOM	0	1,991	0	c	1,991	. (	, (	) 0				•
_	2		0	1,991	0		1,991	L (	, (	) (			_	
Zone	2	-	0	1,991	0		1,991	1 1	p (	-				•
Zone	2		0	1,991	O	, (	1,99	1	0 (	, (				•
System	-	Block	0	1,991	c	) (	1,99	1	0 1	,				- ,
System		BLY HALL	0	12,272	c	) (	12,27	2 77	0	0 7,670		-		7,670
Zone	3		0	12,272	•	)	12,27	2 77	0	0 7,67		•	-	0 7,670 0 7,670
Zone	3	Block	0	12,272	(	)	12,27	2 77	-	0 7,67		-	-	0 7,670
System	3	Total/Ave.	0	12,272	(		0 12,27		-	0 7,67	-	•	•	0 7,670
System	3	Block	0	12,272		)	0 12,27		-	0 7,67	-	•	•	0 10,683
-1	MEDIO	CAL CLINIC	0	28,489	(	D	0 28,48		_	0 10,68	-	0	•	0 10,683
Zone	4	Total/Ave.	0	28,489		0	0 28,48			0 10,68	-	0	•	0 10,683
Zone	4	Block	0	28,489		0	0 28,48			0 10,68	_	0	•	0 10,683
System	4	Total/Ave.	0	28,489		0	0 28,48			0 10,68	-	0	0	0 10,683
System	. 4	Block	0	28,489		0	0 28,48			0 10,68		0	0	0 5,032
- 6	OFFI	CES-STORE	0	9,930		0	0 9,93		00	0 5,03	_	0	0	0 5,032
Zone	6	Total/Ave.	0	9,930		0	0 9,93	-	00	0 5,03	-	0	0	0 5,032
Zone	6	Block	0	9,930		0	0 9,93	-	00	0 5,03		0	0	0 5,032
System	6	Total/Ave.	0	9,930		0	0 9,93		00	0 5,03		0	0	0 5,032
System	6	Block	0	9,930		0	0 9,93		00	0 5,03		0	0	0 12,000
7	CHAP	EL-AUDTRM	0	16,000		0	0 16,00			0 12,00		0	0	0 12,000
Zone	7	Total/Ave.	0	16,000		0	0 16,00			0 12,00		0	0	0 12,000
Zone	7	Block	0	16,000		0	0 16,0			0 12,0		0	0	0 12,000
System	1 7	Total/Ave.	0			0	0 16,0			0 12,0		0	0	0 12,000
System	a 7	Block	0	16,000		0	0 16,0	00 2,4	00	0 12,0				

HEATING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD

------AIRFLOW HEAT GAIN AND LOSS------(At time of Coil Peak)

		-		7-4	System		System	Room			Run		Syste
			Supply -	Return Fan	Exhaust		Exhaust	Exhaust	Ducted	Plenum		Corridr	
			Fan	Heat	Heat Loss	Total	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflo
Room			Heat	(Btuh)	(Btuh)	(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfr
nmper	De	escription	(Btuh)	(BCun)	(204)	•						_	
			12,272	0	0	12,272	770	0	7,670	0	0		
3		BLY HALL	12,272	0	o	12,272	770	0	7,670	0	0	0	
ne		Total/Ave.	12,272	0	0	12,272	770	0	7,670		0	_	
ne	3	Block	12,272	0	0	12,272	770	. 0	7,670		0		•
stem	3	Total/Ave.	12,272	0	0	12,272	770	) 0	7,670	0	0	_	-
ystem	3	Block	7,402	0	0	7,402	770	) 0	7,710	0		_	
5		ING ISSUE	7,402	0	0	7,402	770	, ,	7,710	O		_	•
one	5	Total/Ave.	7,402	0	0	7,402	770	, (	7,710	C			
one	5	Block	7,402	0	_	7,402	770	) (	7,710				•
ystem	5			0	_	7,402	770	o (	7,710		) (		7,1
ystem	5	Block	7,402	0	_	16,000		0	12,000	) (	) (	, (	12,0
7	CHAPE	L-AUDTRM	16,000	0	_	16,000		0 (	12,000	) (	) (	) (	12,0
one	7	Total/Ave.	16,000		_	16,000		0 (	12,000	) (	)	י ס	0 12,
one	7	Block	16,000	C	_	16,000		0	0 12,000	) (	)	0 '	0 12,
System	7	Total/Ave.	16,000	C	_	16,000	•		0 12,00	)	0	0	0 12,
System	7	Block	16,000	C	, 0	16,000	2,40	•					

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

AUX. HEAT AIR HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

(At time of Auxiliary Coil Peak)

							- Heating						
							System	Room			Run		System
			Supply	Return	System Exhaust		Evhaust	Exhaust	Ducted	Plenum		Corridr	Return
			Fan	Fan	Heat Loss	Total	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow
Room			Heat	Heat		(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
Number	De	scription	(Btuh)	(Btuh)	(Btuh)	(Bcan)	(0==7	• ′	·				
				_	0	0	12,870	0	12,870	0	0	0	12,870
1	ADMIN	OFFICES	0	0		0	12,870		12,870	0	0	0	12,870
Zone	1	Total/Ave.	0	0	0	0	12,870		12,870	0	0	0	12,870
Zone	1	Block	0	0	0		12,870	_		0	O	. 0	12,870
System	1	Total/Ave.	0	0	0	0	- •				c	) 0	12,870
System	1	Block	0	0	0	0	12,870					) 0	3,240
4	MEDICA	AL CLINIC	0	0	0	0	3,240					, (	3,240
Zone		Total/Ave.	0	0	0	0	3,240					, (	3,240
Zone	4	Block	0	0	0	0	3,240	) (		_		-	
	4		o	0	0	0	3,240	) (	3,240		•	•	
System			0	0	0	0	3,240	) (	3,240	) (			3,240
System	4		0	0	0	0	1,98	g (	1,980	) (	י כ	0 (	1,980
6		ES-STORE		0	-	0	1,98	0 1	1,980	) (	3	0 (	1,980
Zone	6	Total/Ave.	0	_	-	0			0 1,98	)	0	0	1,980
Zone	6	Block	0	C	-	c	•		0 1,98		0	0	0 1,980
System	6	Total/Ave.	О	C					0 1,98		0	0	0 1,980
System	6	Block	0	(	0		1,90	•	2,50	-			

ROOM PSYCHROMETRICS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

------PSYCHROMETRIC STATE POINTS-----

Room 2

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	63.4	53.7	73.2	29.4	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan Return Air	75.0	63.4	53.7	73.2	29.4	
Outdoor Air	82.9	69.9	53.3	94.8	34.8	
Return/Outdoor Air Mix	75.0	63.4	53.7	73.2	29.4	0.1
Blow through Fan					29.5	
Entering Coil	75.1	63.4	53.4	73.2		
Leaving Coil	63.4	59.3	79.4	72.9	26.6	0.0
Draw Through Fan						0.2
Duct Frictional Heat						0.0
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	63.6	59.4	78.9	72.9		
Supply Air	63.6	59.4	78.9	72.9	26.6	

Percent Outside Air 0.00 (%)
Sensible Heat Ratio (SHR) 0.962
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 5,600 (Cfm)

ZONE PSYCHROMETRICS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

------PSYCHROMETRIC STATE POINTS-----

Zone 3

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	62.9	51.9	70.8	29.1	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan			51.9	70.8	29.1	• • • • • • • • • • • • • • • • • • • •
Return Air	75.0	62.9				
Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	76.9	64.6	52.4	76.2	30.4	0.0
Blow through Fan						0.0
Entering Coil	76.9	64.6	52.4	76.2	30.4	
Leaving Coil	55.6	54.1	91.4	63.2	23.1	
Draw Through Fan						0.4
Duct Frictional Heat						1.1
						0.0
Supply Duct Heat Gain	57.1	54.7	86.5	63.2	23.5	
Cold Deck Supply Air Supply Air	57.1	54.7	86.5	63.2	23.5	

Percent Outside Air 10.04 (%)
Sensible Heat Ratio (SHR) 0.780
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 7,670 (Cfm)

PAGE 42

ZONE PSYCHROMETRICS - ALTERNATIVE 1
BLDG 2100 BASERUN - FT LEONARD WOOD

PSYCHROMETRIC STATE POINTS-----

Zone 7

Space	Dry Bulb (F) 75.0	Wet Bulb (F) 68.1	Relat. Humid. (%) 71.0	Ratio (GR) 97.5	Enthalpy (Btu/Lb) 33.2	Temp. Diff. (F)
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan Return Air Outdoor Air Return/Outdoor Air Mix Blow through Fan Entering Coil Leaving Coil	75.0 93.3 78.7 78.7 67.3	68.1 77.4 70.1 70.1 64.9	71.0 49.9 66.3 66.3	97.5 124.1 102.8 102.8 93.2	33.2 41.9 35.0 35.0	0.0
Draw Through Fan						0.9
Duct Frictional Heat						0.0
Supply Duct Heat Gain Cold Deck Supply Air Supply Air	68.6 68.6	65.3 65.3	84.5 84.5	93.2 93.2		

Percent Outside Air 20.00 (%)
Sensible Heat Ratio (SHR) 0.703
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow (Cfm)

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

SYSTEM PSYCHROMETRICS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

System 1

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	62.3	50.0	68.2	28.7	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan	75.0	62.3	50.0	68.2	28.7	• • • • • • • • • • • • • • • • • • • •
Return Air Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	76.2	63.5	50.5	71.7	29.5	
Blow through Fan						0.0
Entering Coil	76.2	63.5	50.5	71.7	29.5	
Leaving Coil	56.9	54.9	88.4	64.2	23.6	
Draw Through Fan						0.5
Duct Frictional Heat						1.5
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	58.9	55.7	82.2	54.2	24.1	
Supply Air	58.9	55.7	82.2	64.2	24.1	

Percent Outside Air 6.37 (%)
Sensible Heat Ratio (SHR) 0.853
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 19,769 (Cfm)

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

SYSTEM PSYCHROMETRICS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

System 4

Space	Dry Bulb (F) 75.0	Wet Bulb (F) 62.3	Relat. Humid. (%) 50.0	Humid. Ratio (GR) 68.2	Enthalpy (Btu/Lb) 28.7	Temp. Diff. (F)
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan Return Air	75.0	62.3	50.0	68.2	28.7	
Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	77.2	64.4	50.8	74.8	30.2	0.0
Blow through Fan	77.2	64.4	50.8	74.8	30.2	
Entering Coil Leaving Coil	55.9	54.3	90.5	63.5	23.3	0.6
Draw Through Fan						1.9
Duct Frictional Heat						0.0
Supply Duct Heat Gain Cold Deck Supply Air Supply Air	58.4 58.4	55.3 55.3	82.7 82.7	63.5 63.5		0.0
• • •						

Percent Outside Air 11.82 (%)
Sensible Heat Ratio (SHR) 0.835
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 10,740 (Cfm)

SYSTEM PSYCHROMETRICS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

System 6

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	( <b>F</b> )	(F)	(*)	(GR)	(Btu/Lb)	(F)
Space	75.0	62.3	50.0	68.2	28.7	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan	75.0	62.3	50.0	68.2	28.7	
Return Air Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	77.6	64.8	50.9	75.9	30.5	0.0
Blow through Fan Entering Coil	77.6	64.8	50.9	75.9	30.5	
Leaving Coil	56.1	54.5	90.9	64.1	23.4	0.5
Draw Through Fan						1.4
Duct Frictional Heat						0.0
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	58.0	55.3	85.0	64.1	_	
Supply Air	58.0	55.3	85.0	64.1	23.9	

Percent Outside Air 13.91 (%)
Sensible Heat Ratio (SHR) 0.857
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 5,032 (Cfm)

BUILDING U-VALUES - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING U-VALUES-----

			Room U-Values(Btu/hr/sqft/F)									Room	Room Capac.
						(Btu/	hr/sqf					(1b/	(Btu/
Room					Summr	Wintr		Summr	Wintr	Wall	Ceil.	sqft)	sqft/F)
Number	Desci	ription	Part.	ExFlr	Skylt	Skylt	Roof	Windo	Windo	WAII	Cell.	Bq. v,	- 4 /
		-									0.000	45.8	9.81
1	ADMIN	OFFICES	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.097	0.000	45.8	9.81
Zone	1	Total/Ave.	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.097	• • • • • •	45.8	9.81
System	1	Total/Ave.	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.097	0.000	65.0	13.67
2	COMPIL	TER ROOM	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.092	0.000		13.67
Zone	2	Total/Ave.	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.092	0.000	65.0	13.67
	2	Total/Ave.	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.092	0.000	65.0	
System	_	BLY HALL	0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.094	0.000	49.2	10.53
3			0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.094	0.000	49.2	10.53
Zone	3		0.347	0.830	0.000	0.000	0.029	0.621	0.655	0.094	0.000	49.2	10.53
System	3			0.830	0.000	0.000	0.029	0.621	0.655	0.093	0.000	44.4	9.54
4	MEDIC	AL CLINIC	0.347			0.000	0.029	0.621	0.655	0.093	0.000	44.4	9.54
Zone	4	Total/Ave.	0.347	0.830	0.000			0.621	0.655	0.093	0.000	44.4	9.54
System	4	Total/Ave.	0.347	0.830	0.000	0.000	0.029		0.655	0.116	0.317	45.1	9.67
5	CLOTE	ING ISSUE	0.347	0.830	0.000	0.000	0.029			0.116	0.317	45.1	9.67
Zone	5	Total/Ave.	0.347	0.830	0.000	0.000	0.029				0.317	45.1	9.67
System	5	Total/Ave.	0.347	0.830	0.000	0.000	0.029			0.116		33.6	7.22
- 6	OFFI	CES-STORE	0.347	0.830	0.000	0.000	0.029			0.104	0.000	33.6	7.22
Zone	6	Total/Ave.	0.347	0.830	0.000	0.000	0.029				0.000		
System	6	Total/Ave.	0.347	0.830	0.000	0.000	0.029	0.621		0.104	0.000	33.6	
7		EL-AUDTRM	0.347	0.830	0.000	0.000	0.029	0.621	0.655		0.000	69.8	
Zone	7		0.347	0.830	0.000	0.000	0.029	0.621	0.655		0.000	69.8	
System				0.830	0.000	0.000	0.029	0.623	0.655	0.097	0.000	69.8	
Buildi			0.347		0.000	0.000	0.029	0.621	0.655	0.100	0.317	46.2	9.88
B01101	ng												

Trane Air Conditioning Economics

By: Trane Customer Direct Service Network

BUILDING AREAS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

BUILDING AREAS -----

Room Number	Descri	lption		er of icate Rm	Floor Area/Dupl Room (sqft)	Total Floor Area (sqft)	Partition Area (sqft)	Exposed Floor Area (sqft)	Skylight Area (sqft)	Sk1 /Rf (%)	Net Roof Area (sqft)	Window Area (sqft)	Win /Wl (%)	Net Wall Area (sqft)
						18,716	11,076	627	0	0	18,716	636	8	7,526
1	ADMIN	OFFICES	1	1	18,716		11,076	627	0	0	18,716	636	8	7,526
Zone	1	Total/Ave.				18,716	11,076	627	0	0	18,716	636	8	7,526
System	1	Total/Ave.				18,716	501	62	0	0	861	120	14	748
2	COMPU	TER ROOM	1	1	861	861	501	62	o	0	861	120	14	748
Zone	2	Total/Ave				861	501	62	0	0	861	120	14	748
System	2	Total/Ave				861		16	0	0	8,081	728	21	2,782
3	ASSEM	BLY HALL	1	1	7,667	7,667	7,340	16	0	0	8,081	728	21	2,782
Zone	3	Total/Ave	•			7,667	7,340	16	0	-	8,081	728	21	2,782
System	3	Total/Ave				7,667	7,340		0	•	14,187	751	13	4,955
- 4	MEDIC	AL CLINIC	1	1	14,142	14,142	9,258	219	-	•	14,187	751	13	4,955
Zone	4	Total/Ave				14,142	9,258	219	0		14,187	751	13	•
System	4	Total/Ave				14,142	9,258	219	O		•	54	1	
5,500		ING ISSUE	1	1	12,680	12,680	5,875	199	C		12,680	54		
Zone		Total/Ave				12,680	5,875	199	C		12,680		_	
System	_	Total/Ave				12,680	5,875	199	(		12,680	54	_	
System 6		ES-STORE	1	. 1	13,222	13,222	7,668	132	(		9,887	60		•
-		Total/Ave				13,222	7,668	132	(	0	•	60		•
Zone		Total/Ave				13,222	7,668	132	(	0	9,887	60		2,166
System				. 1	7,501	7,501		232		0 0	7,963	396		5,826
7		EL-AUDTRM			,,501	7,501		232		0 0	7,963	396	, (	5,826
Zone		Total/Ave				7,501		232		0 0	7,963	396	,	6 5,826
System	e 7	Total/Ave	3.			74,789		1,487		0 0	72,375	2,746	5	9 29,390
Build	lng					14,70	, 30,013	-,						

ASHRAE 90 ANALYSIS - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

------ ASHRAE 90 ANALYSIS-----

Overall Roof U-Value = 0.029 (Btu/Hr/Sq Ft/F)
Overall Wall U-Value = 0.144 (Btu/Hr/Sq Ft/F)

Overall Building U-Value = 0.064 (Btu/Hr/Sq Ft/F)

Roof Overall Thermal Transfer Value (OTTVr) = 1.51 (Btu/Hr/Sq Ft)
Wall Overall Thermal Transfer Value (OTTVw) = 10.38 (Btu/Hr/Sq Ft)

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

Main System 1 VAVFSK VAV WITH FORCED FLO SKIN

	Cool	ing Top	4	Heatin	g Load		Cooling	Airflow		Heating		
Percent		Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.		HOULD	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(*)	500	-20,235	63	239	626.5	18	538	0.0	0	0
0 - 5	2.2	18	509		25	95	1,253.0	10	297	0.0	0	0
5 - 10	4.5	11	318	-40,470	12	47	1,879.5	7	203	0.0	0	0
10 - 15	6.7	9	262	-60,705	_		2,506.0	6	178	0.0	0	0
15 - 20	8.9	5	133	-80,940	0	0	3,132.5	4	105	0.0	0	0
20 - 25	11.2	5	149	-101,175	0	0		5	135	0.0	o	0
25 - 30	13.4	4	117	-121,410	0	0	3,759.0	_	56	0.0	0	0
30 - 35	15.6	3	75	-141,645	0	0	4,385.5	2		0.0	0	0
	17.9	3	87	-161,880	0	0	5,012.0	4	112		0	0
		1	40	-182,115	0	0	5,638.5	2	64	0.0		
40 - 45	20.1		111	-202,350	0	0	6,265.0	0	0	0.0	0	
45 - 50	22.3	4		-222,585	0	0	6,891.5	1	23	0.0	0	0
50 - 55	24.6	8	213	•	0	0	7,518.0	3	89	0.0	0	0
55 - 60	26.8	11	318	-242,820			8,144.5	1	20	0.0	0	0
60 - 65	29.0	10	283	-263,055	0	_	8,771.0	1	20	0.0	0	0
65 - 70	31.3	6	166	-283,290	0		·	_	_	0.0	0	0
70 - 75	33.5	0	0	-303,525	0	0	9,397.5	0		0.0	o	. 0
75 - 80	35.7	0	0	-323,760	0	0	10,024.0	1				
· <del>-</del>	38.0	0	0	-343,995	0	0	10,650.5	1	44	0.0	•	
80 - 85		0		-364,230	c	0	11,277.0	1	43	0.0		
85 - 90	40.2			-384,465	c	. 0	11,903.5	c	0	0.0	c	0
90 - 95	42.4	o		-		_	12,530.0	35	1,048	0.0		) 0
95 - 100	44.7	O		-404,700		-	0.0		5,765	0.0		8,760
Hours Off	0.0	c	5,979	0	C	0,3/9	0.0		•			

Main System	2	PTAC	PACKAGED	TERMINAL	AIR	COND.
-------------	---	------	----------	----------	-----	-------

ercent	Cool	ing Loa	d	Heatin			Cooling	Airflow Hours	Hours	Heating Cap.	Airflow Hours	Hours
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.		nours	(Cfm)	(%)	
Load	(Ton)	(%)		(Btuh)	(₺)		(Cfm)	(%)	0	0.0	` 0	0
0 - 5	0.5	0	0	-18,813	0	0	280.0	0		0.0	0	0
5 - 10	1.0	0	0	-37,626	0	0	560.0	0	0	0.0	0	0
10 - 15	1.5	0	0	-56,439	0	0	840.0	0	0	0.0	0	0
15 - 20	2.0	0	0	-75,252	0	0	1,120.0	0	0	0.0	0	0
20 - 25	2.5	5	424	-94,065	0	0	1,400.0	0	0	0.0	0	0
25 - 30	3.1	36	3,155	-112,878	0	0	1,680.0	0	0		0	0
30 - 35	3.6	23	2,039	-131,691	0	0	1,960.0	0	0	0.0	0	0
35 - 40	4.1	9	829	-150,504	0	0	2,240.0	0	0	0.0	0	0
40 - 45	4.6	5	444	-169,317	0	0	2,520.0	0	0	0.0	0	0
45 - 50	5.1	13	1,171	-188,130	0	0	2,800.0	0	0	0.0	-	0
50 - 55	5.6	6	550	-205,943	0	. 0	3,080.0	0	0	0.0	0	0
55 - 60	6.1	2	148	-225,756	0	0	3,360.0	0	0	0.0	_	0
60 - 65	6.6	0	0	-244,569	О	0	3,640.0	0	0	0.0	0	0
65 - 70	7.2	О	o	-263,382	0	0	3,920.0	0	0	0.0	0	
70 - 75	7.7	0	0	-282,194	0	0	4,200.0	0	0	0.0	0	
75 - 80	8.2	0	0	-301,007	0	0	4,480.0	0	0	0.0	0	
	8.7	0	0	-319,820	0	0	4,760.0	0	0	0.0	0	
	9.2	0		-338,633	0	0	5,040.0	0	0	0.0		
85 - 90	9.7	0		-357,446	0	0	5,320.0	0	0	0.0		
90 - 95				-376,259	o	0	5,600.0	100	8,760	0.0		
95 - 100 Bours Off	10.2	0		0	0		0.0	0	o	0.0	0	8,760

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

Main System 3 SZ SINGLE ZONE

B	Cool	ing Loa	d	Heatin	g Load		Cooling			Heating	Airflow Hours	Hours
Percent	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	(%)	Hours
Design	-	(%)	•	(Btuh)	(%)		(Cfm)	(%)		(Cfm)		0
Load	(Ton)	20	562	-15,960	19	160	383.5	0	0	0.0	0	
0 - 5	1.5	_	_	-31,920	16	133	767.0	0	0	0.0	0	0
5 - 10	3.1	13	349	-47,880	26	221	1,150.5	0	0	0.0	0	О
10 - 15	4.6	10	283		40	337	1,534.0	0	0	0.0	0	0
15 - 20	6.2	9	260	-63,840	0	0	1,917.5	0	0	0.0	0	0
20 - 25	7.7	6	173	-79,800	0	0	2,301.0	0	0	0.0	0	0
25 - 30	9.3	9	240	-95,760	_	0	2,684.5	0	0	0.0	0	0
30 - 35	10.8	В	236	-111,720	0		3,068.0	0	0	0.0	0	0
35 ~ 40	12.4	7	194	-127,680	0	0	3,451.5	0	О	0.0	0	0
40 - 45	13.9	5	129	-143,640	0		3,835.0	0	0	0.0	0	0
45 - 50	15.5	7	190	-159,600	0		4,218.5	0	0	0.0	0	0
50 - 55	17.0	4	108	-175,560	0			0	0	0.0	0	0
55 - 60	18.6	2	62	-191,520	O	0	4,602.0	_		0.0	0	0
60 - 65	20.1	C	0	-207,480	C	) 0	4,985.5	0	_	0.0	0	
65 - 70	21.7	c	0	-223,440	C	0	5,369.0				0	
70 - 75	23.2		) 0	-239,400	(	0	5,752.5	0	0	0.0		
	24.8		. 0	-255,360	(	0	6,136.0	0	0	0.0	0	
	26.3		0	-271,320	(	0	6,519.5	0	0	0.0		
80 - 85	27.8		0	-287,280		0 0	6,903.0		0	0.0		
85 - 90			0 0	-303,240		0 0	7,286.5	i c	0	0.0		
90 - 95	29.4		-	-319,200		0 0	7,670.0	100	8,760	0.0		_
95 - 100 Hours Off	30.9		0 0 0 5,974	0		0 7,909	0.0	) (	0	0.0	. (	8,760

VAV WITH FORCED FLO SKIN Main System 4 VAVFSK

Percent	Cool	_		Heatin	g Load	Hours	Cooling Cap.	Airflow Hours	Hours	Heating Cap.	Hours	
Design	Cap.		Hours	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(8)	
Load	(Ton)	(%)		•	72	2,055	537.0	14	358	0.0	0	0
0 - 5	2.2	14	342	-29,650		795	1,074.0	9	238	0.0	0	0
5 - 10	4.5	12	295	-59,300	28		1,611.0	7	174	0.0	0	0
10 - 15	6.7	13	310	-88,950	0	0	2,148.0	7	165	0.0	0	0
15 - 20	9.0	9	225	-118,600	0	0	•	7	188	0.0	0	0
20 - 25	11.2	8	184	-148,250	0	0	2,685.0	, 5	120	0.0	0	0
25 - 30	13.5	9	205	-177,900	0	0	3,222.1	6	147	0.0	0	0
30 - 35	15.7	12	289	-207,550	0	0	3,759.1	6	148	0.0	0	0
35 - 40	18.0	4	89	-237,200	0	0	4,296.1		101	0.0	0	0
40 - 45	20.2	6	143	-266,850	0		4,833.1	4	62	0.0	0	0
45 - 50	22.5	7	175	-296,500	0	0	5,370.1	2		0.0	0	0
50 ~ 55	24.7	4	105	-326,150	0	. 0	5,907.1	3	86	0.0	0	
55 - 60	27.0	1	20	-355,800	0	0	6,444.1	3	87		0	
60 - 65	29.2	0	0	-385,450	0	0	6,981.1	8	194	0.0	0	
65 - 70	31.5	0	0	-415,100	0	0	7,518.1	2		0.0		_
70 - 75	33.7	o	0	-444,750	O	0	8,055.1	5		0.0	0	
75 - 80	36.0	C		-474,400	c	0	8,592.1	4	108	0.0	0	
80 - 85	38.2	c		-504,050	c	0	9,129.2	5	125	0.0		
	40.5			-533,700	(	0	9,666.2	2	43	0.0		
85 - 90		,	-	-563,350	(	0	10,203.2	C	0	0.0		
90 - 95	42.7		-	-593,000		0	10,740.2	c	0	0.0	c	
95 - 100 Hours Off	45.0		0 6,378	-393,000		5,910	0.0	C	6,225	0.0		8,760

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

Main System 5 SZ SINGLE ZONE

			_	Heatin	a Load		Cooling	Airflow		1	Heating	Airflow	
Percent	Cool	-			Hours	Hours	Cap.	Hours	Hours		Cap.	Hours	Hours
Design	Cap.	Hours	Hours	Capacity	(%)	Bours	(Cfm)	(%)			(Cfm)	(*)	
Load	(Ton)	(%)		(Btuh)		314	385.5	0	0		0.0	0	0
0 - 5	0.0	0	0	-19,860	13	603	771.0	0	0		0.0	0	0
5 - 10	0.0	0	0	-39,720	26		1,156.5	0	О		0.0	0	0
10 - 15	0.0	0	0	-59,580	35	809	1,542.0	0	0		0.0	0	0
15 - 20	0.0	0	0	-79,440	26	612		0	0		0.0	0	0
20 - 25	0.0	0	0	-99,300	0	0	1,927.5	0	0		0.0	0	0
25 - 30	0.0	0	0	-119,160	0	0	2,313.0		0		0.0	0	0
30 - 35	0.0	0	0	-139,020	0	0	2,698.5	0	0		0.0	0	0
35 - 40	0.0	0	0	-158,880	0	0	3,084.0	0	0		0.0	0	0
40 - 45	0.0	0	0	~178,740	0	0	3,469.5	0	-		0.0	0	0
45 - 50	0.0	0	0	-198,600	0	0	3,855.0	0	0		0.0	0	0
50 - 55	0.0	0	0	-218,460	0	0	4,240.5	0	0		0.0	0	0
55 - 60	0.0	0	0	-238,320	0	0	4,626.0	0	0			0	0
60 - 65	0.0	0	0	-258,180	0	0	5,011.5	0	0		0.0		0
	0.0	0	0	-278,040	О	0	5,397.0	0	0		0.0	0	=
**	0.0	0	0	-297,900	0	0	5,782.5	0	0		0.0	0	0
70 - 75		0	0	-317,760	0	0	6,168.0	0	0		0.0	0	
75 - 80	0.0		0	-337,620	0	0	6,553.5	0	0		0.0	0	0
80 - 85	0.0	0		-357,480	0		6,939.0	0	0		0.0	0	0
85 - 90	0.0	0		-377,340			7,324.5	0	0		0.0	0	0
90 - 95	0.0	0		-377,340			7,710.0	100	5,088		0.0	0	. 0
95 - 100	0.0	0		•			0.0		3,672		0.0	0	8,760
Hours Off	0.0	0	8,760	0	,	0,422	• • •						

Main System 6 VAVFSK VAV WITH FORCED FLO SKIN

	Cool	ing Los	đ	Heatin	ng Load		Cooling	Airflow		Heating		
Percent		-	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.	Hours	HOULS	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(%)		, ,	87	2,440	251.6	21	613	0.0	0	0
0 - 5	1.1	23	639	-14,745		358	503.2	10	275	0.0	0	0
5 - 10	2.2	15	413	-29,490	13		754.8	10	302	0.0	0	0
10 - 15	3.3	9	252	-44,235	0	0		6	182	0.0	0	0
15 - 20	4.4	8	208	-58,980	0	0	1,005.4	_		0.0	0	0
20 - 25	5.5	11	306	-73,725	0	0	1,258.0	7	210	0.0	0	0
25 - 30	6.5	9	258	-88,470	0	0	1,509.6	3	77		0	0
30 - 35	7.6	9	259	-103,215	0	0	1,761.2	4	115	0.0		0
35 - 40	8.7	4	102	-117,960	0	0	2,012.8	3	90	0.0	0	
40 - 45	9.8	5	131	-132,705	0	0	2,264.4	2	64	0.0	0	0
	10.9	5	129	-147,450	0	0	2,516.0	4	105	0.0	0	0
	12.0	1	40	-162,195	0	0	2,767.6	2	67	0.0	0	0
50 - 55		0	0	-176,940	0.	0	3,019.2	5	144	0.0	0	0
55 - 60	13.1		0	-191,685	0	0	3,270.8	6	179	0.0	0	0
60 - 65	14.2	0	-	-206,430	0	0	3,522.4	4	124	0.0	0	0
65 - 70	15.3	0		- •	0	0	3,774.0	4	127	0.0	0	0
70 - 75	16.4	0		-221,175	0	0	4,025.6	4	110	0.0	0	0
75 - 80	17.5	0		-235,920		0	4,277.2	3	85	0.0	0	0
80 ~ 85	18.5	0	0	-250,665	0		4,528.8	1	20	0.0	0	0
85 - 90	19.6	0	0	-265,410	0	0	•		0	0.0	0	0
90 - 95	20.7	0	0	-280,155	О	0	4,780.4	=		0.0	0	
95 - 100	21.8	0	0	-294,900	0	0	5,032.1	0	0		0	
Hours Off	0.0	. 0	6,023	0	0	5,962	0.0	0	5,871	0.0	U	9,,00

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

Main System 7 SZ SINGLE ZONE

Main System	m , D	-										
D	Cool	ing Load	1	Heatin	g Load		Cooling	Airflow		Heating	Airflow Hours	Hours
Percent	Cap.	_	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.		Hourd
Design	-	(%)	••	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	0
Load	(Ton)	22	422	-28,787	11	408	600.0	0	0	0.0	0	0
0 - 5	2.3	17	319	-57,574	22	805	1,200.0	0	0	0.0	0	-
5 - 10	4.7		370	-86,361	26	971	1,800.0	0	0	0.0	0	0
10 - 15	7.0	20		-115,148	17	634	2,400.0	0	0	0.0	0	0
15 - 20	9.4	21	402	-143,935	24	869	3,000.0	0	0	0.0	0	0
20 - 25	11.7	10	187	-172,721	0	0	3,600.0	0	0	0.0	0	0
25 - 30	14.1	10	186		0	0	4,200.0	0	0	0.0	0	0
30 - 35	16.4	0	0	-201,508	0	0	4,800.0	0	0	0.0	0	0
35 - 40	18.8	0	0	-230,295	0	_	5,400.0	0	0	0.0	0	0
40 - 45	21.1	0	0	-259,082	_	_	6,000.0	0	0	0.0	0	0
45 - 50	23.4	0	0	-287,869	0	_			0	0.0	0	0
50 - 55	25.8	0	0.	-316,656	0	_				0.0	0	0
55 - 60	28.1	0	0	-345,443	0		•			0.0	0	0
60 - <del>6</del> 5	30.5	0	0	-374,230	O				_	0.0	0	0
65 - 70	32.8	0	0	-403,017	C					0.0		0
70 - 75	35.2	0	0	-431,804	c	) [		-		0.0		0
75 - 80	37.5	0	0	-460,591	(					0.0		
80 - 85	39.9	0	0	-489,378	(	) (				0.0		0
85 - 90	42.2	0	0	-518,164	(	) (				0.0		
90 - 95	44.5	0	0	-546,951	(	) (			0	0.0		
95 - 100	46.9	o	0	-575,730	1	=	12,000.0			0.0		0 8,760
Hours Of	£ 0.0	o	6,874	0	1	0 5,07	3 0.0	•	0	0.0	'	, 0,,00

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

SYSTEM LOAD PROFILE -----

## System Totals

ayacem 10t				*	g Load		Cooling	Airflow		Heating	Airflow	
Percent Design Load	Cap.	ing Loa. Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap.	Hours (%)	Hours	Cap.	Hours (%)	Hours
_		74	6,486	-148,050	61	2,345	3,064.1	0	0	0.0	0	0
0 - 5	10.0	5	406	-296,100	30	1,165	6,128.2	0	0	0.0	0	0
5 - 10	20.0	3	256	-444,150	8	313	9,192.3	0	0	0.0	0	-
10 - 15	29.9	3	257	-592,199	0	0	12,256.4	0	0	0.0	0	0
15 - 20	39.9		154	-740,249	0	0	15,320.6	0	0	0.0	0	0
20 - 25	49.9	2	346	-888,299	0	0	18,384.7	0	0	0.0	0	0
25 - 30	59.9	4	345	-1,035,349	0	0	21,448.8	0	0	0.0	0	0
30 - 35	69.8	4		-1,184,399	0	0	24,512.9	0	0	0.0	0	0
35 - 40	79.8	2			0	0	27,577.0	17	1,502	0.0	0	0
40 - 45	89.8	2		-1,332,449		0	30,641.1	5	424	0.0	0	0
45 - 50	99.8	1		-1,480,499	0		33,705.2	61	5,356	0.0	0	0
50 - 55	109.7	1	60	-1,628,549	0		36,769.3	3	238	0.0	0	0
55 - 60	119.7	0	0	-1,776,599	0			1		0.0	0	0
60 - 65	129.7	0	0	-1,924,649	0		39,833.5	1		0.0	0	0
65 - 70	139.7	0	0	-2,072,698	0		42,897.6	_	_	0.0		0
70 - 75	149.6	O	0	-2,220,748	0		45,961.7	2		0.0		0
75 - 80	159.6	C	0	-2,368,798	0		49,025.8	5		0.0		
80 - 85	169.6	c	0	-2,516,848	0		52,089.9	4		0.0		*
85 - <b>9</b> 0	179.6	c	0	-2,664,898	C	0	55,154.0	0		0.0	_	
90 - 95	189.5	C	0	-2,812,948	C	0	58,218.1	0		0.0		
95 - 100	199.5	(	0	-2,960,998	C		61,282.2	O.		0.0		
Hours Off	0.0	(	0	0	C	4,937	0.0	c	0	0.0	`	,

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

							Saturd	nv	Sunday		Monda	y
Januar	y		Design	-	Weekda	•	Htg Btuh C	-1	Htg Btuh C		Htg Btuh	Clg Ton
Hour	OADB	OAWB	Htg Btuh C		Htg Btuh		-251,708	2.6	-337,713	2.6	-367,062	2.6
1	24.1	19.9	-417,901	0.0	-261,536	2.6		2.6	-352,947	2.5	-381,414	2.5
2	23.4	19.5	-437,905	0.0	-273,104	2.6	-262,513 -265,205	2.5	-357,692	2.5	-384,267	2.5
3	23.7	20.0	-448,889	2.5	-275,424	2.5	-298,697	2.5	-356,563	2.5	-381,376	2.5
4	24.7	21.1	-458,606	2.5	-275,584	2.5		2.5	-349,721	2.5	-372,892	2.5
5	26.3	22.8	-465,678	2.5	-268,059	2.5	-319,698	2.5	-324,823	2.5	-346,464	2.5
6	28.3	25.0	-457,225	2.4	-296,343	2.5	-297,442	2.5	-305,438	2.5	-325,654	2.5
7	30.8	27.9	-445,886	2.4	-290,422	2.5	-281,562	2.5	-279,721	2.5	~220,896	3.1
8	33.5	30.8	-344,656	3.0	-192,387	3.1	-259,555	2.6	-255,603	2.6	-183,710	3.6
9	36.4	33.5	-279,969	3.5	-165,366	3.6	-239,539	2.7	-222,856	2.7	-145,898	4.1
10	39.3	35.6	-223,844	4.1	-139,985	4.2	-211,063	2.9	-155,005	2.9	-111,627	4.7
11	42.1	36.8	-156,871	4.7	-110,805	4.7	-179,219	3.1	-114,844	3.0	-95,102	4.8
12	44.6	37.5	-103,174	5.0	-94,324	4.8	-148,294	3.2	-110,360	3.2	-77,212	4.9
13	46.6	38.2	-79,062	5.2	-76,476	4.9	-119,947	3.3	-94,329	3.3	-65,844	5.0
14	48.2	38.3	-57,253	5.4	-65,148	5.0	-104,122 -90,848	3.3	-88,450	3.3	-53,307	5.0
15	49.2	39.0	-44,330	5.5	-53,224	5.0		3.3	-90,684	3.3	-49,792	5.0
16	49.5	39.1	-44,159	5.6	-50,453	5.0	-85,678	3.2	-84,470	3.2	-41,905	4.7
17	48.8	38.9	-42,824	5.3	-42,584	4.7	-79,647	3.1	-85,318	3.1	-37,455	4.0
18	47.0	38.5	-48,416	4.5	-36,881	4.0	-80,672 -94,697	2.9	-101,446	2.9	-47,559	3.5
19	44.1	37.3	-60,523	3.8	-46,991	3.5	*	2.8	-133,133	2.8	-64,278	3.1
20	40.5	34.	-80,012	3.2	-63,742	3.1	-118,151	2.7	-193,640	2.7	-121,014	2.7
21	36.4	31.	-121,407	2.8	-120,508	2.7	-169,442	2.7	-256,509	2.7	-165,604	2.7
22	32.4	27.	7 -181,068	2.7	-166,127	2.7	-223,562	2.6	-304,043	2.6	-205,013	2.7
23	28.8	3 24.	3 -205,632	2.7	-204,563	2.7	-269,024	2.6	-339,614	2.6	-229,751	2.6
24	25.9	9 21.	7 -230,084	2.6	-229,326	2.6	-306,936	2.0				
						3	Satu	rdav	Sund	ау	Mon	day
Febr	uary		Desi		Week		Satu		Sund			day Clg Ton
Febr Bour	-	B OAW	Desi B Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Sunda Htg Btuh -250,872			
	OAD		Desi	Clg Ton 2.6	Htg Btuh -191,602	Clg Ton 2.6	Htg Btuh -192,309	Clg Ton 2.6	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton 2.6
Hour	OAD: 31. 29.	5 28. 8 26.	Desi B Htg Btuh 3 -225,605 8 -239,699	Clg Ton 2.6 2.6	Htg Btuh -191,602 -202,211	Clg Ton 2.6 2.6	Htg Btuh -192,309 -201,778	Clg Ton 2.6 2.6	Htg Btuh -250,872	Clg Ton 2.6	Htg Btuh -281,068	Clg Ton 2.6 2.6
Hour 1	OAD: 31. 29.	5 28.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508	Clg Ton 2.6 2.6 2.5	Htg Btuh -191,602 -202,211 -220,934	Clg Ton 2.6 2.6 2.6	Htg Btuh -192,309 -201,778 -220,508	Clg Ton 2.6 2.6 2.6	Htg Btuh -250,872 -261,013	Clg Ton 2.6 2.6	Htg Btuh -281,068 -296,613	2.6 2.6 2.6 2.6
Hour 1 2	OAD: 31. 29. 28.	5 28. 8 26. 3 25. 1 24.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397	2.6 2.6 2.5 2.5	Htg Btuh -191,602 -202,211 -220,934 -230,503	2.6 2.6 2.6 2.6 2.6	Htg Btuh -192,309 -201,778 -220,508 -230,084	Clg Ton 2.6 2.6 2.6 2.6 2.6	Htg Btuh -250,872 -261,013 -282,305	Clg Ton 2.6 2.6 2.6	Htg Btuh -281,068 -296,613 -321,679	2.6 2.6 2.6 2.5
Hour 1 2 3	OAD 31. 29. 28. 27.	5 28. 8 26. 3 25. 1 24. 2 23.	B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182	2.6 2.6 2.5 2.5 2.5	Htg Btuh -191,602 -202,211 -220,934 -230,503	Clg Ton 2.6 2.6 2.6 2.6 2.6 2.6	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534	Clg Ton 2.6 2.6 2.6 2.6 2.5	Htg Btuh -250,872 -261,013 -282,305 -299,103	Clg Ton 2.6 2.6 2.6 2.5	Htg Btuh -281,068 -296,613 -321,679 -337,884	2.6 2.6 2.6 2.6 2.5 2.5
Hour 1 2 3	OAD: 31. 29. 28. 27. 26. 25.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637	2.6 2.6 2.5 2.5 2.5 2.5	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,559 -268,970	Clg Ton 2.6 2.6 2.6 2.5 2.5	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434	Clg Ton 2.6 2.6 2.6 2.6 2.6	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406	Clg Ton 2.6 2.6 2.6 2.5 2.5	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622	2.6 2.6 2.6 2.5 2.5 2.5
Hour 1 2 3 4 5	OAD: 31. 29. 28. 27. 5 26. 25. 7 25.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637 4 -318,363	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,559 -268,970 -309,573	Clg Ton 2.6 2.6 2.6 2.6 2.6 2.6 2.5 2.5 2.5	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103	Clg Ton 2.6 2.6 2.6 2.5 2.5	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929	2.6 2.6 2.6 2.5 2.5 2.5 2.5
Hour 1 2 3 4 5	OADD 31. 29. 28. 27. 5 26. 5 25. 7 25.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637 4 -318,363	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 3.1	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,573	Clg Ton 2.6 2.6 2.6 2.6 2.6 2.5 2.5 3.1	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,925 -366,858	2.6 2.6 2.6 2.5 2.5 2.5 3.1
Hour 1 2 3 4 5 6	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 3 26.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. .2 24.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637 .4 -318,363 .4 -230,181 .1 -192,253	2.6 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,573 -233,61	Clg Ton 2.6 2.6 2.6 2.6 2.6 2.5 2.5 3.1 3.6	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.5	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,355	2.6 2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2
Bour 1 2 3 3 4 5 5 6 6 5 7 8 8 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637 .4 -318,363 .4 -230,181 .1 -192,253 .7 -159,351	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 3.1 3.6 4.2	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61' -201,384 -175,88	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 3.1 3.6 3.4.2	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 2.5 2.5 2.6	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.5	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,359 -245,530	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2
Hour 1 2 3 3 4 4 5 5 6 6 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 9 26. 9 28.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637 .4 -318,363 .4 -230,181 .1 -192,253 .7 -159,351 .3 -116,768	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61 -201,386 -175,88	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 3.1 3.6 3.4.2 4.7	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.5 2.7	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.5 2.7	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,359 -245,530 -151,633	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 4.7 4.8
Hour 1 2 3 3 4 4 5 5 6 6 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. .2 31.	Desi B Htg Btuh 3	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61 -201,386 -175,88 -138,94	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 3.1 3.6 3.6 3.4.2 4.7 3.4.8	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.5 2.7 2.9	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.7 2.8	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,355 -245,530 -206,036 -151,63	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 4.7 4.8 4.8
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 1 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. .2 31. .0 33.	Desi B Htg Btuh 3	2.6 2.6 2.5 2.5 2.5 2.5 2.5 4.9 5.0 5.2	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61 -201,386 -175,88 -138,94 -106,41 -84,26	Clg Ton	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.7 2.9 3.0 3.1	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031	clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.8 3.0	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,355 -245,530 -151,63: -118,64 -96,05	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 4.7 4.8 4.8 5.0
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. 2 31. 0 33. 2 35.	Desi B Htg Btuh 3 -225,605 8 -239,699 5 -249,508 4 -284,397 6 -324,182 5 -325,637 4 -318,363 4 -230,181 1 -192,253 7 -159,351 3 -116,768 9 -87,150 9 -64,106	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61' -201,386 -175,88 -138,94 -106,41 -84,26 -69,41	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 3.1 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.00	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.5 2.6 2.7 2.9 3.0 3.1 3.2	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161	clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.8 3.0 3.1	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,353 -206,030 -151,633 -118,64 -96,05 -80,66	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 3.4.7 4.8 4.8 4.5.0 8.5.0
Hour 1 2 3 3 4 4 5 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 31. 29. 28. 27. 26. 25. 7 25. 26. 28. 31. 35. 24. 44. 45.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. 2 31. 0 33. 2 35. 3 36. 0 36.	Desi B Htg Btuh 3	Clg Ton 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61' -201,386 -175,88 -138,94 -106,41 -84,26 -69,41	Clg Ton	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151	Clg Ton 2.6 2.6 2.6 2.5 2.5 2.5 2.7 2.9 3.0 3.1 3.2 3.3	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161	clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.8 3.0 3.1 3.2	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,353 -206,030 -151,633 -118,64 -96,05 -80,66 -73,69	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 3.4.7 4.8 4.8 4.5.0 8.5.0 6.5.1
Hour 1 2 3 3 4 4 5 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 31. 29. 328. 327. 35. 326. 326. 326. 326. 327. 328. 328. 328. 328. 328. 328. 328. 328	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. 2 31. 0 33. 2 35. 3 36. 0 36. 8 36.	Desi B Htg Btuh 3	2.6 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5 5.6	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61 -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 3.1 3.6 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.0 1.5.0 9.5.1	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718	clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.8 3.0 3.1 3.2 3.3 3.3	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,355 -245,530 -151,633 -118,64 -96,05 -80,66 -73,69 -68,33	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 3.4.7 4.8 4.8 5.0 8.5.0 6.5.1 4.8
Hour 1 2 3 3 4 4 5 5 6 6 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 31. 29. 328. 327. 35. 326. 328. 328. 328. 328. 328. 328. 342. 342. 344. 35. 45. 66. 444. 7. 444.	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. 2 31. 0 33. 2 35. 3 36. 0 36. 8 36.	Desi B Htg Btuh 3	Clg Ton 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5 5.6 6.5.3	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61 -201,381 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 2.5 3.1 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.0 1.5.0 9.5.1 6.4.8	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718	clg Ton	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,353 -206,030 -151,630 -118,64 -96,05 -80,66 -73,69 -68,33 -63,01	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 3.4.7 4.8 4.8 5.0 8.5.0 6.5.1 5.4.8 6.4.1
Hour 1 2 3 3 4 4 5 5 6 6 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 31. 29. 326. 326. 326. 326. 326. 326. 326. 326	5 28. 8 26. 3 25. 1 24. 2 23. 6 23. 5 23. 2 24. 3 26. 5 28. 2 31. 0 33. 2 35. 3 36. 0 36. 8 36. 3 35. 4 35.	Desi B Htg Btuh 3	Clg Ton 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5 2.5 5.6 1.5.3	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61: -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06 -57,34 -49,63	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 2.5 3.1 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.0 1.5.0 9.5.1 6.4.8 7.4.1	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048 -104,854	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718 -112,247 -107,417	clg Ton	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,353 -206,030 -151,630 -118,64 -96,05 -80,66 -73,69 -68,33 -63,01 -56,30	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 3.4.7 4.8 4.8 5.0 8.5.0 6.5.1 5.4.8 6.4.1 0.3.6
Hour 1 2 3 3 4 4 5 5 6 6 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39. 3 42. 4 44. 5 45. 6 44. 7 44. 8 43.	5 28.8 26.3 25.1 24.4 2 23.6 23.1 26.5 28.3 26.5 28.3 36.0 36.8 36.3 35.4 35.2 36.2 36.2 36.2 36.2 36.2 36.2 36.2 36	Desi B Htg Btuh 3	Clg Ton 2.6 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5 2.5 5.6 1.4.5 8.3.9	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61: -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06 -57,34 -49,63 -43,08	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 2.5 3.1 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.0 1.5.0 9.5.1 6.4.8 7.4.1 1.3.6	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048 -104,854 -100,289	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718 -112,247 -107,417 -106,190	clg Ton	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,929 -366,858 -287,353 -206,030 -151,633 -118,64 -96,05 -80,66 -73,69 -68,33 -63,01 -56,30 -52,19	2.6 2.6 2.5 2.5 2.5 3.1 3.6 4.2 3.4.7 4.8 4.8 5.0 8 5.0 6 5.1 5 4.8 6 4.1 0 3.6 4 3.1
Hour 1 2 3 3 4 4 5 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39. 3 42. 4 44. 5 45. 6 44. 7 44. 8 43.	5 28.8 26.3 25.1 24.4 2 23.6 23.1 26.5 28.3 26.5 28.3 36.0 36.0 36.8 36.0 36.2 35.4 35.2 36.0 36.0 36.0 36.0 36.0 36.0 36.0 36.0	Desi B Htg Btuh 3	Clg Ton 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5 2.5 4.5 5.6 1.4.5 8.3.9 2.3.2	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61: -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06 -57,34 -49,63 -43,08 -81,75	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 2.5 3.1 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.0 1.5.0 9.5.1 6.4.8 7.4.1 1.3.6 3.1	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048 -104,854 -100,289 -99,318 -113,923	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718 -112,247 -107,417 -106,190 -120,548	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.8 3.0 3.1 3.2 3.3 3.3 3.3 3.2 2.8	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,925 -366,856 -287,355 -245,530 -151,63: -118,64 -96,05 -80,66 -73,69 -68,33 -63,01 -56,30 -52,19 -91,07	Clg Ton  2.6  2.6  2.5  2.5  2.5  3.1  3.6  4.2  3.4.7  4.8  4.8  4.8  5.0  8.5.0  6.5.1  5.4.8  6.4.1  0.3.6  4.1  0.3.6
Hour 1 2 3 3 4 4 5 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 29. 328. 327. 326. 326. 327. 326. 327. 328. 328. 328. 328. 348. 349. 340. 340. 340. 340. 340. 340. 340. 340	5 28.8 26.3 25.1 24.4 2 23.6 23.6 23.2 24.3 26.5 28.3 36.0 36.0 36.8 36.0 36.0 36.0 36.0 36.0 36.0 36.0 36.0	Desi B Htg Btuh 3	Clg Ton 2.6 2.5 2.5 2.5 2.5 2.5 3.1 3.6 4.2 4.9 5.0 5.2 5.4 5.5 2.5 5.6 1.5.3 4.5 8.3.9 2.8	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61: -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06 -57,34 -49,63 -43,08 -81,75	Clg Ton 2.6 2.6 2.6 2.6 2.5 2.5 2.5 3.1 3.6 3.4.2 2.4.7 3.4.8 8.4.8 5.0 1.5.0 9.5.1 6.4.8 7.4.1 1.1 3.6 3.1 1.8 2.8	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048 -104,854 -100,289 -99,318 -113,923 -152,255	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718 -112,247 -107,417 -106,190 -120,548 -163,640	Clg Ton 2.6 2.6 2.5 2.5 2.5 2.5 2.5 2.6 2.7 2.8 3.0 3.1 3.2 3.3 3.3 3.3 3.1 3.0 2.8	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,925 -366,856 -287,355 -245,530 -206,031 -151,63: -118,64 -96,05 -80,66 -73,69 -68,33 -63,01 -56,30 -52,19 -91,07 -109,54	Clg Ton  2.6  2.6  2.5  2.5  2.5  3.1  3.6  4.2  3.4.7  4.8  4.8  4.8  5.0  8.5.0  6.5.1  5.4.8  6.4.1  0.3.6  4.1  0.3.6  4.1  0.3.6  4.1  0.3.6
Hour 1 2 3 3 4 4 5 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39. 3 42. 4 44. 5 45. 6 44. 7 44. 8 43. 9 42. 20 40. 21 39. 22 37.	5 28.8 26.3 25.1 24.4 2 23.6 23.6 23.2 24.3 26.5 28.3 36.0 36.8 36.0 36.2 37.4 35.0 37.1 37.1 37.1 37.1 37.1 37.1 37.1 37.1	Desi B Htg Btuh 3	Clg Ton	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61 -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06 -57,34 -49,63 -43,08 -81,75 -100,55	Clg Ton  2.6  2.6  2.6  2.5  2.5  3.1  3.6  3.6  4.2  4.7  3.4  8.8  4.8  5.0  9  5.1  6.4  7  4.1  13.6  3.6  3.1  18.8  2.8  2.7	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048 -104,854 -100,289 -99,318 -113,923 -152,255 -180,493	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718 -112,247 -107,417 -106,190 -120,548 -163,640 -197,180	Clg Ton	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,925 -366,856 -287,355 -245,530 -151,63: -118,64 -96,05 -80,66 -73,69 -68,33 -63,01 -56,30 -52,19 -91,07 -109,54	Clg Ton  2.6  2.6  2.5  2.5  2.5  3.1  3.6  4.2  3.4.7  4.8  4.8  4.8  5.0  8.5.0  6.5.1  5.4.8  6.4.1  0.3.6  4.1  0.3.6  4.1  0.3.6  4.1  0.3.6
Hour 1 2 2 3 4 4 5 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OAD: 31. 29. 28. 27. 5 26. 5 25. 7 25. 8 26. 9 28. 0 31. 1 35. 2 39. 3 42. 4 44. 5 45. 6 44. 7 44. 8 43. 9 42. 20 40. 21 39. 22 37.	5 28.8 26.3 25.1 24.4 2 23.6 23.6 23.2 24.3 26.5 28.3 36.0 36.0 36.8 36.0 36.0 36.0 36.0 36.0 36.0 36.0 36.0	Desi  B Htg Btuh  3	Clg Ton	Htg Btuh -191,602 -202,211 -220,934 -230,503 -239,555 -268,970 -309,57: -233,61: -201,386 -175,88 -138,94 -106,41 -84,26 -69,41 -65,93 -62,06 -57,34 -49,63 -43,08 -81,75 -100,55 -123,52 -146,73	Clg Ton  2.6  2.6  2.6  2.5  2.5  3.1  3.6  3.6  4.2  4.7  3.4.8  6.4.8  5.0  9  5.1  6.4.8  7  4.1  1.3.6  3.6  3.1  1.0  2.8  2.7  2.7	Htg Btuh -192,309 -201,778 -220,508 -230,084 -289,534 -305,434 -309,175 -309,096 -293,148 -263,625 -221,877 -176,412 -144,151 -121,095 -113,056 -106,048 -104,854 -100,289 -99,318 -113,923 -152,255 -180,493 -202,775	Clg Ton	Htg Btuh -250,872 -261,013 -282,305 -299,103 -314,406 -329,103 -335,258 -335,701 -317,220 -282,804 -203,310 -146,031 -137,526 -114,161 -113,418 -113,718 -112,247 -107,417 -106,190 -120,548 -163,640 -197,180	Clg Ton	Htg Btuh -281,068 -296,613 -321,679 -337,884 -350,622 -362,925 -366,856 -287,355 -245,530 -151,63: -118,64 -96,05 -80,66 -73,69 -68,33 -63,01 -56,30 -52,19 -91,07 -109,54	Clg Ton  2.6  2.6  2.5  2.5  2.5  3.1  3.6  4.2  3.4.7  4.8  4.8  4.8  5.0  8.5.0  6.5.1  5.4.8  6.4.1  0.3.6  4.1  0.3.6  4.1  0.3.6  4.1  0.3.6

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

							Saturd	lav	Sunda	y	Monda	у
March			Design	-	Weekda		Htg Btuh		Htg Btuh		Htg Btuh	Clg Ton
Hour	OADE	OAWB	Htg Btuh		Htg Btuh		-109,291	2.8	-132,081	2.7	-137,818	2.7
1	40.0	36.8	-171,300	2.7	-80,869	2.8	-143,358	2.7	-171,276	2.7	-177,914	2.7
2	37.3	34.5	-184,232	2.7	-107,106	2.7	-160,185	2.7	-211,996	2.7	-218,396	2.7
3	34.9	32.2	-199,888	2.6	~160,770	2.7 2.7	-175,474	2.6	-229,527	2.6	-238,917	2.6
4	32.9	30.3	-206,885	2.6	-176,033	2.7	-197,451	2.6	-257,496	2.6	-272,014	2.6
5	31.4	28.8	-247,414	2.6	-198,000		-205,639	2.6	-265,655	2.6	-284,978	2.6
6	30.4	28.0	-263,610	2.6	-206,174	2.6	-210,624	2.6	-272,234	2.6	-292,797	2.6
7	30.1	27.6	-256,421	2.5	-211,139	2.6	-212,769	2.6	-270,863	2.6	-213,709	3.2
8	30.7	28.0	-160,751	3.2	-181,216	3.2	-206,219	2.6	-259,145	2.6	-188,808	3.7
9	32.5	28.9	-126,600	3.7	-166,888	3.7	-207,867	2.7	-232,228	2.7	-156,271	4.2
10	35.4	30.6	-84,993	4.3	-141,094	4.2 4.7	-184,433	2.9	-163,071	2.9	-121,289	4.7
11	38.9	32.6	-54,572	4.9	-106,664	4.8	-136,488	3.1	-107,159	3.1	-95,171	4.8
12	42.9	35.4	-32,580	5.1	-80,679	4.9	-99,006	3.2	-92,972	3.2	-66,347	4.9
13	46.8	38.5	-18,243	5.2	-59,026	5.1	-72,343	3.3	-60,759	3.3	-45,502	5.1
14	50.4	41.3	-4,597	5.4	-45,502	5.1	-51,585	3.4	-43,990	3.4	-30,894	5.1
15	53.2	43.6	О	5.5	-30,894	5.1	-42,070	3.3	-42,070	3.3	-25,191	5.1
16	55.0	45.1	0	5.5	-25,191		-31,239	3.3	-31,239	3.3	-16,888	4.8
17	55.6	45.4	0	5.3	-16,688	4.8	-21,797	3.2	-21,797	3.2	-3,986	4.1
18	55.3	45.9	0	4.6	-3,986	4.1	-22,958	3.0	-22,958	3.0	0	3.6
19	54.4	46.1	0	4.0	0	3.6	•	2.9	-28,473	2.9	-5,417	3.2
20	52.8	46.3	-18,709	3.4	-5,417	3.2	-28,473	2.9	-42,100	2.8	-10,706	2.9
21	50.8	45.5	-30,999	3.0	-10,706	2.9	-38,849	2.8	-71,121	2.8	-30,270	2.8
22	48.4	43.7	-53,777	2.9	-30,270		-63,729		-90,326	2.8	-48,770	2.8
23	45.7	41.6	-79,412	2.8	-45,293	2.8	-82,919	2.8	-112,255	2.8	-68,947	2.8
			-94,152	2.8	-58,402	2.8	-105,113	2.8	-112,233			
24	42.9	39.2	-94,132									
24	42.9	39.2						dov	Sun	iav	Mon	day
24 April		39.2	Desi	gn	Week		Satu		Sund		Mon Htg Btuh	=
				gn Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh			Clg Ton
April		ewao a	Desi Htg Btuh -16,845	gn Clg Ton 3.0	Htg Btuh O	Clg Ton 2.9	Htg Btuh O	Clg Ton 2.9		Clg Ton 2.9	Htg Btuh	Clg Ton 2.9
April Hour	OADB	B OAWB	Desi Htg Btuh -16,845 -30,095	.gn Clg Ton 3.0 2.9	Htg Btuh O O	Clg Ton 2.9 2.9	Htg Btuh 0 0	Clg Ton 2.9 2.9	Htg Btuh O	Clg Ton 2.9 2.9	Htg Btuh	Clg Ton 2.9 2.9
April Hour 1	OADB 56.3 54.2 52.3	OAWB 50.9 2 48.9 3 47.7	Desi Htg Btuh -16,845 -30,095 -40,895	gn Clg Ton 3.0 2.9 2.9	Htg Btuh 0 0 0	Clg Ton 2.9 2.9 2.9	Htg Btuh O O	Clg Ton 2.9 2.9 2.9	Htg Btuh O	Clg Ton 2.9 2.9 2.9	Htg Btuh O	Clg Ton 2.9 2.9 2.9
April Hour 1 2	OADB 56.3 54.2 52.3	OAWB 50.9 2 48.9	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901	.gn Clg Ton 3.0 2.9 2.9	Htg Btuh 0 0 0	Clg Ton 2.9 2.9 2.9 2.9	Htg Btuh O O O	2.9 2.9 2.9 2.9 2.9	Htg Btuh O O	Clg Ton 2.9 2.9 2.9 2.9	Htg Btuh O O	Clg Ton 2.9 2.9 2.9 2.9
April Hour 1 2	OADB 56.3 54.2 52.3	OAWB 50.9 2 48.9 3 47.7	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514	gn Clg Ton 3.0 2.9 2.9 2.9	Htg Btuh 0 0 0 0	Clg Ton 2.9 2.9 2.9 2.9 2.9 2.8	Htg Btuh  0  0  0  0  0	2.9 2.9 2.9 2.9 2.9 2.9	Htg Btuh 0 0 0 0	Clg Ton 2.9 2.9 2.9 2.9 2.9	Htg Btuh O O O	2.9 2.9 2.9 2.9 2.9 2.8
April Hour 1 2 3	OADB 56.3 54.2 52.3 50.7 49.5	OAWB 5 50.9 2 48.9 3 47.7 7 46.4	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189	gn Clg Ton 3.0 2.9 2.9 2.9 2.8 2.8	Htg Btuh 0 0 0 0 0	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8	Htg Btuh  0  0  0  0  0  0	2.9 2.9 2.9 2.9 2.9 2.8 2.8	Htg Btuh 0 0 0 0	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8	Htg Btuh 0 0 0 0 -3,232	clg Ton 2.9 2.9 2.9 2.9 2.8 2.8
April Hour 1 2 3 4	OADB 56.3 54.2 52.3 50.7 49.5 48.8	OAWB 50.9 48.9 47.7 46.4 5 45.4 44.7 5 44.7	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951	gn Clg Ton 3.0 2.9 2.9 2.9 2.8 2.8 3.4	Htg Btuh  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.9 2.9 2.8 3.4	Htg Btuh 0 0 0 0 0 0 0	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8	Htg Btuh  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8	Htg Btuh 0 0 0 0 -3,232 -4,826	2.9 2.9 2.9 2.9 2.8 2.8 3.4
April Hour 1 2 3 4 5	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.1	3 OAWB 3 50.9 2 48.9 3 47.7 7 46.4 5 45.4 8 44.7 5 44.7 2 44.5	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363	gn Clg Ton 3.0 2.9 2.9 2.9 2.8 2.8 3.4 3.9	Htg Btuh  0  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.9 2.9 2.8 3.4 3.8	Htg Btuh 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8 2.8	Htg Btuh 0 0 0 0 0 0 0 -4,407	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8	Htg Btuh 0 0 0 -3,232 -4,826 -5,413	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8
April Hour 1 2 3 4 5 6	OADB 56.3 54.2 52.3 50.1 49.5 48.8 49.2	3 OAWB 3 50.9 2 48.9 3 47.7 7 46.4 5 45.4 8 44.7 5 44.7 2 44.5	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471	gn Clg Ton 3.0 2.9 2.9 2.9 2.8 2.8 3.4 3.9 4.3	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.9 2.9 2.9 2.9 2.8 3.4 3.8 4.3	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 -23,092	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8	Htg Btuh 0 0 0 0 0 0 -4,407 -42,363	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8 2.8	Htg Btuh  0  0  -3,232  -4,826  -5,413	2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3
April Hour 1 2 3 4 5 6 7	OADB 56.3 54.2 52.3 50.7 49.5 48.8 49.2 51.	OAWB 50.9 2 48.9 3 47.7 46.4 5 45.4 44.7 2 44.5 2 44.6 2 46.1	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471	gn Clg Ton 3.0 2.9 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8	Htg Btuh  0  0  0  0  0  0  0  -21,424 -23,600	Clg Ton 2.9 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8	Htg Btuh  0  0  0  0  0  0  0  0  -23,092  -35,243  -23,736	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 2.9	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 2.8	Htg Btuh  0  0  0  -3,232  -4,826  -5,413  -31,755  -35,123	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8
April Hour 1 2 3 4 5 6 7 8	OADB 56.3 54.2 52.3 50.7 49.5 48.8 49.7 51.5	OAWB 50.9 48.9 8 47.7 46.4 5 45.4 44.7 44.5 44.6 2 46.1 8 8.8	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 4.8	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 2.8 3.1	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,759  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8
April Hour  1 2 3 4 5 6 7 8 9	OADB 56.3 54.2 52.3 50.7 49.5 48.8 49.: 51.: 54.:	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 2 46.1 8 88.8 51.6	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,759  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 4.8
April Hour  1 2 3 4 5 6 7 8 9 10	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.2 51.5 54.5 57.61.65.	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 2 46.1 8 88.8 51.6 4 54.4	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 4.8 4.8
April Hour  1 2 3 4 5 6 7 8 9 10 11	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.2 51. 54. 57. 61.	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 2 46.1 8 88.8 51.6 4 54.4	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 4.9 5.1 0.5.2	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,91	Clg Ton 2.9 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 4.8 5.4 4.8 5.5 4.9 5.1
April Hour  1 2 3 4 5 6 7 8 9 10 11 12	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.7 51.0 54.0 57.0 65.0	0 OAWB 0 50.9 2 48.9 3 47.7 7 46.4 45.4 44.7 2 44.5 2 44.6 2 46.1 8 8 51.6 4 54.4 4 56.7 4 56.7 4 56.7 4 56.7	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 6.5 4.8 7 7 7 7 7 8 7 8 8 7 8 8 8 8 8 8 8 8 8	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0	2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 4.8 5.4 5.4 5.5 6.5 7.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 57.6 65.68.70.71.	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 18 8 51.6 4 54.4 56.7 4 58.3 0 58.2	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 5.1 0.5.2 0.5.2 0.5.2	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0	2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 4.8 5.5 5.1 5.2 5.2
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 54.6 57.6 68.70.71.70.	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 18 88 51.6 4 54.4 56.7 4 58.3 0 58.2 8 58.5	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 5.5 6.5 6.5 7 7 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0	2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,759  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 5.5 5.5 6.5 7.7 7.7 7.7 7.7 7.7 7.7 7.7 7.7 7.7 7
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 57.6 61.65.68.70.71.70.	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 2 46.1 8 851.6 4 54.4 56.7 4 58.3 0 58.2 8 58.5 1 58.2	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3 4.8 4.3	Htg Btuh  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 5.1 0.5.2 0.5.2 0.5.2 0.4.9 0.4.4 0.3.9	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0  0	2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.8 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,759  -35,123  -23,600  -9,910	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 5.5 5.1 6.5 6.5 7.7 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.5 51.6 54.6 57.6 61.65.68.70.71.70.68.	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 45.4 46.1 8 851.6 4 56.7 4 56.3 0 58.2 8 58.5 1 58.2 9 58.3	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0 0 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3 4.8 4.3 3.7	Htg Btuh  0  0  0  0  0  0  -21,424  -23,600  -9,916	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 5.2 6.5 6.6 7 7 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.8 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.3 3.4 3.3	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,91	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 5.5 5.1 6.5 6.5 7.7 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	OADB 56.3 54.2 52.3 50.7 49.5 48.6 48.5 57.6 61.65.68.70.71.70.68.6	OAWB 50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 45.4 46.1 8 851.6 4 54.4 456.7 456.3 0 58.2 8 58.5 1 58.2 9 58.3 3 58.5	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0 0 0 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3 4.8 4.3 3.7 3.3	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,918	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 5.1 0.5.2 0.5.2 0.4.9 0.4.4 0.3.9 0.3.4 0.3.9	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.4	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,91	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 6.5 5.2 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	OADB 56.3 54.2 52.3 50.7 49.5 48.6 48.5 57.6 61.65.68.70.71.70.68.6	CAWB 50.9 2 48.9 3 47.7 7 46.4 5.4 44.7 2 44.5 2 44.6 18 8 51.6 4 54.4 4 56.7 4 58.3 0 58.2 8 58.5 1 58.2 9 58.3 3 58.5 4 57.9	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3 4.8 4.3 3.7 3.3 3.7	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,918	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.1 0.5.2 0.5.2 0.5.2 0.4.9 0.3.9 0.3.4 0.3.9 0.3.4 0.3.9	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0  0  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.3	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,91	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 6.5 5.2 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	OADB 56.3 54.2 52.3 50.7 49.5 48.6 48.5 57.6 61.65.68.70.70.66.6 67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.68.67.65.67.65.68.67.65.68.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.65.67.6	0 OAWB 0 50.9 2 48.9 3 47.7 7 46.4 4 45.4 4 4.7 2 44.5 2 44.6 2 46.1 8 8 51.6 4 54.4 4 56.7 4 58.3 0 58.2 8 58.5 1 58.2 9 58.3 3 58.5 4 57.9 3 58.3 5 6.3	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3 4.8 4.3 3.7 3.3 3.7 3.3 3.2 3.1	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,918	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.4 4.9 5.1 0.5.2 0.5.2 0.4.9 0.4.4 0.3.9 0.3.4 0.3.9 0.3.1 0.3.1 0.3.1	Htg Btuh  0  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0  0  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.3 3.4 3.4	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,91	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 6.5 5.1 5.2 6.7 5.2 6.7 6.8 6.8 6.9 6.9 7 7 7 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8
April Hour  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	OADB 56.3 54.2 52.3 50.7 49.5 48.6 48.5 57.6 61.65.68.70.70.66.6 67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.665.68.67.67.665.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.67.68.	CAWB 50.9 2 48.9 3 47.7 7 46.4 5.4 44.7 2 44.5 2 44.6 18 8 51.6 4 54.4 4 56.7 4 58.3 0 58.2 8 58.5 1 58.2 9 58.3 3 58.5 4 57.9	Desi Htg Btuh -16,845 -30,095 -40,895 -48,901 -53,514 -52,189 -33,951 -25,363 -12,471 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	gn Clg Ton 3.0 2.9 2.9 2.8 2.8 3.4 3.9 4.3 4.8 4.9 5.1 5.3 5.4 5.5 5.3 4.8 4.3 3.7 3.3 3.7 3.3 3.2 3.1 3.0	Htg Btuh  0  0  0  0  0  0  0  -21,424  -23,600  -9,918	Clg Ton 2.9 2.9 2.9 2.8 3.4 3.8 4.3 4.8 5.1 0.5.2 0.5.2 0.5.2 0.4.9 0.3.9 0.3.4 0.3.9 0.3.4 0.3.9	Htg Btuh  0  0  0  0  0  0  -23,092  -35,243  -23,736  -9,970  0  0  0  0  0  0  0  0  0  0  0  0	Clg Ton 2.9 2.9 2.9 2.8 2.8 2.8 2.8 2.8 3.1 3.2 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	Htg Btuh  0  0  0  0  -4,407  -42,363  -35,243	Clg Ton	Htg Btuh  0  0  -3,232  -4,826  -5,413  -31,755  -35,123  -23,600  -9,91	Clg Ton 2.9 2.9 2.9 2.8 2.8 3.4 3.8 4.3 4.8 5.4 6.5 5.2 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD

			Desi	gn	Weekd	.ay			Sund		Monda	
May	ONDR	OAWB	Htg Btuh		Htg Btuh		Htg Btuh	Clg Ton	Htg Btuh		Htg Btuh	3.9
Hour		59.6	0	40.9	o	3.9	0	3.9	0	3.9	0	3.0
1 2		57.9	0	37.3	0	3.0	0	3.0	0	3.0	0	3.0
3		56.5	0	30.8	0	3.0	· 0	3.0	0	3.0	0	2.9
		55.5	0	18.8	0	2.9	0	2.9	0	2.9	0	2.9
4		54.8	0	18.3	o	2.9	0	2.9	0	2.9	0	2.9
5			0	16.1	0	2.9	0	2.9	0	2.9	0	4.3
6		54.7	0	19.7	0	4:3	0	2.9	0	2.9		9.3
7		55.2	0	26.3	o	9.3	0	2.9	· 0	2.9	0	17.4
8	59.4		0		0	17.4	0	3.0	0	3.0	0	28.1
9	61.7		0		0	28.1	0	3.0	0		0	50.5
10		57.7	0		0	50.6	0	3.1	0		0	
11		59.7	0	_	o	52.7	0	5.2	0	5.2	0	52.7
12		62.0	0		c		o	15.1	0	15.1	0	58.5
13		63.9					C	19.8	0	19.8	0	62.8
14	_	65.3	0			66.2	c	22.6	a	24.3	0	66.2
15		66.4	0			61.5	C	23.6	, с	27.6		61.5
16		66.4	C			0 55.3	(	28.0	, (	29.1	0	
17	78.0	66.3	(			0 50.1	(	27.7	,	27.6	0	50.1
18		66.2		56.9				0 24.3	, (	24.3	0	34.3
19	76.0	66.5		47.9				0 21.5		21.5	0	22.3
20	74.	3 66.4		0 39.9				0 17.3		0 17.3	. 0	18.0
21	72.	3 66.5		0 27.7				0 11.6		0 11.8	0	12.
22	70.	1 64.9	1	0 11.2				0 7.2		0 7.2	. 0	7.!
23	67.	8 63.2		0 5.7		0 7.5		0 4.8		0 4.8	, 0	4.
24	65.	5 61.4		0 4.5	•	0 4.8		•				
			_		Was	akday	Sa	turday	Su	nday	Mon	
June				sign		nh Clg Ton		h Clg To		h Clg Tor	n Htg Btuh	. Clg To
Hou:			•	h Clg Tor	=	0 4.0	•	0 4.		0 4.0	0	4.
		2 65.3		0 8.4		0 3.0		0 3.	0	0 3.0	0 0	3.
		3 63.9		0 6.0		0 3.0		0 3.	0	0 3.0	0 0	3.
	3 64.	5 62.	1	0 4.		0 3.0		0 3.	0	0 3.0	0 0	3.
	4 64.	0 61.			3	0 3.0	,				0 0	3.
		-	3	0 3.	_	0 3 /	`	0 3.	0	0 3.0	-	
	5 63.	8 60.		0 3.		0 3.0		0 3.		0 2.9	_	0 2.
			В	0 3.	4	0 2.9	9	0 2.	9	_	9 (	0 2. 0 15.
	6 64. 7 65.	.8 60. .2 61. .1 61.	8 2 7	0 3. 0 3. 0 29.	4 9	0 2.9	9 7	0 2.	9	0 2.9	9 (	
	6 64. 7 65. 8 66.	.8 60. .2 61. .1 61. .8 62.	B 2 7 3	0 3. 0 3. 0 29. 0 47.	<b>4</b> 9 2	0 2.9 0 15.7 0 38.8	9 7 8	0 2. 0 3. 0 3.	9 0 0	0 2.9	9 0	0 15.
	6 64. 7 65. 8 66.	.8 60. .2 61. .1 61.	B 2 7 3	0 3. 0 3. 0 29. 0 47. 0 61.	<b>4</b> 9 2 9	0 2.9 0 15.7 0 38.8 0 54.	9 7 8 1	0 2. 0 3. 0 3. 0 3.	9 0 0	0 2.9 0 3.0 0 3.0	9 C 0 C 1 C	0 15. 0 39.
	6 64. 7 65. 8 66. 9 69	.8 60. .2 61. .1 61. .8 62.	8 2 7 3	0 3. 0 3. 0 29. 0 47. 0 61. 0 75.	4 9 2 9 3	0 2.9 0 15.0 0 38.0 0 54.0	9 7 8 1 8	0 2. 0 3. 0 3. 0 3. 0 6.	9 0 0 .1	0 2.9 0 3.0 0 3.0 0 3.0	9 CO CO CO CO CO CO CO CO CO CO CO CO CO	0 15. 0 39. 0 54.
1	6 64. 7 65. 8 66. 9 69	.8 60. .2 61. .1 61. .8 62. .3 63.	8 2 7 3 3 2	0 3. 0 3. 0 29. 0 47. 0 61. 0 75. 0 79.	4 9 2 9 3 6	0 2.5 0 15. 0 38. 0 54. 0 65. 0 68.	9 7 8 1 8 8	0 2. 0 3. 0 3. 0 3. 0 6. 0 9.	9 0 0 .1 .2	0 2.9 0 3.0 0 3.0 0 3.0 0 6.0	9 C 0 C 1 C 2 C	0 15. 0 39. 0 54. 0 65.
3	6 64. 7 65. 8 66. 9 69 10 72	.8 60.8 .2 61. .1 61. .8 62. .3 63.	8 2 7 3 3 2 5	0 3. 0 29. 0 47. 0 61. 0 75. 0 79.	4 9 2 9 3 6 3	0 2.5 0 15. 0 38. 0 54. 0 65. 0 68. 0 72.	9 7 8 1 8 1 3	0 2. 0 3. 0 3. 0 3. 0 6. 0 9.	9 0 0 1 2 9	0 2.9 0 3.0 0 3.0 0 3.0 0 6.0 13.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15. 0 39. 0 54. 0 65. 0 68
3 3 1	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78	.8 60.: .2 61. .1 61. .8 62. .3 63. .1 65. .4 67. .4 69.	8 2 7 3 3 2 5 8 6	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94.	4 9 2 9 3 6 3 2	0 2.9 0 15. 0 38. 0 54. 0 65. 0 68. 0 72. 0 88.	9 7 8 1 8 1 3	0 2. 0 3. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45.	9 0 0 1 2 9 .7	0 2.5 0 3.6 0 3.6 0 3.6 0 6. 0 13.6 0 34.0	9	0 15. 0 39. 0 54. 0 65. 0 68.
3 3 1	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78	.8 60. .2 61. .1 61. .8 62. .3 63. .1 65. .4 67.	8 2 7 3 3 2 5 8 6	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100.	4 9 2 9 3 6 3 2	0 2.9 0 15.0 0 38.0 0 54. 0 65. 0 68. 0 72. 0 88. 0 92.	9 7 8 1 8 1 3 8	0 2. 0 3. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45.	9 0 0 1 .2 .9 .7	0 2.4 0 3.0 0 3.0 0 6. 0 13. 0 34. 0 46.	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15. 0 39. 0 54. 0 65. 0 68. 0 72.
3 3 3 3 3	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78 13 80 14 82	.8 60.: .2 61. .1 61. .8 62. .3 63. .1 65. .4 67. .4 69.	B 2 7 3 3 2 5 B 6 7	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94.	4 9 2 9 3 6 3 2	0 2.9 0 15. 0 38.1 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95.	9 7 8 1 8 1 3 8 0	0 2. 0 3. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47.	9 0 0 1 2 .9 .7 .1 .7	0 2.0 0 3.0 0 3.0 0 6. 0 13. 0 34. 0 46. 0 48.	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15. 0 39. 0 54. 0 65 0 68 0 72 0 88 0 92
3 3 3 3 3 3 3 3 3	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78 13 80 14 82 15 82	.8 602 611 618 623 631 654 674 697 712 72.	8 2 7 3 3 2 5 8 6 7	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100.	4 9 2 9 3 6 3 2 6 4	0 2.5 0 15. 0 38. 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95.	9 7 8 1 8 1 3 8 0 6 4	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51.	9 0 0 1 2 .9 .7 .1 .7 .5	0 2.0 0 3.0 0 3.0 0 6. 0 13. 0 34. 0 46. 0 48. 0 51.	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15. 0 39. 0 54. 0 65. 0 68. 0 72. 0 88. 0 92.
3 3 3 3 3 3 3 3	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78 13 80 14 82 15 82 16 82	.8 602 611 618 623 631 654 674 697 712 728 72	8 2 7 3 3 2 5 8 6 7 8	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 105.	4 9 2 9 3 6 3 2 6 4	0 2.5 0 15. 0 38.1 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95. 0 89.	9 7 8 1 8 1 3 8 0 6 4 8	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 49.	9 0 0 1 2 .9 .7 .1 .7 .5	0 2.0 0 3.0 0 3.0 0 6.0 13.0 0 46.0 0 48.0 0 51.0	9	0 15. 0 39. 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95. 0 89.
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78 13 80 14 82 15 82 16 82	.8 602 611 618 623 631 654 674 697 712 728 722 73	8 2 7 3 3 2 5 8 6 7 8	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 99.	4 9 2 9 3 6 3 2 6 4 4 .6	0 2.5 0 15. 0 38.1 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95. 0 89. 0 76.	9 7 8 1 8 1 3 8 0 6 4 8 5	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 49. 0 44.	9 0 0 1 2 .9 .7 .1 .7 .5 .6	0 2.3 0 3.0 0 3.0 0 6.0 13.0 46.0 0 48.0 51.0 0 49.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15.0 0 39.0 0 54.0 0 65.0 0 68.0 0 72.0 0 88.0 0 92.0 0 95.0 0 76.0 0 67.0
	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78 13 80 14 82 15 82 16 82 17 80 18 78	.8 602 611 618 623 631 654 674 697 712 728 722 739 72	8 2 7 3 3 2 5 8 6 7 8 1 7	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 105. 0 99.	4 9 2 9 3 6 3 2 6 4 6 4 .6	0 2.5 0 15. 0 38.1 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95. 0 89. 0 76. 0 67.	9 7 8 1 8 1 3 8 0 6 4 8 5 9	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 49. 0 44.	9 0 0 1 2 .9 .7 .1 .7 .5 .6	0 2.3 0 3.0 0 3.0 0 6.0 13.0 46.0 0 48.0 51.0 0 49.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15.0 0 39.0 0 54.0 0 65 0 68 0 72 0 88 0 92 0 95 0 89 0 76 0 67
1 1 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	6 64. 7 65. 8 66. 9 69. 10 72. 11 75. 12 78. 13 80. 14 82. 15 82. 16 82. 17 80. 18 78.	.8 602 611 618 623 631 654 674 697 712 728 722 739 72	8 2 7 3 3 2 5 8 6 7 8 1 7 6	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 105. 0 99. 0 86. 0 76.	4 9 2 9 3 6 3 2 6 4 .6 .1	0 2.5 0 15. 0 38.1 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95. 0 89. 0 76. 0 67. 0 55.	9 7 8 1 8 1 3 8 0 6 4 8 5 9	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 51. 0 49. 0 44. 0 36. 0 30.	9 0 0 1 2 .9 .7 .1 .7 .5 .6 .7 .5	0 2.3 0 3.0 0 3.0 0 3.0 0 46.0 0 48.0 0 51.0 0 49.0 0 44.0 0 36.0 0 30.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15.0 0 39.0 0 54.0 0 65 0 0 68 0 0 72 0 0 88 0 0 92 0 0 95 0 0 67 0 0 67 0 0 34
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	6 64. 7 65. 8 66. 9 69 10 72 11 75 12 78 13 80 14 82 15 82 17 80 18 78 19 76 20 73	.8 602 611 618 623 631 654 674 697 712 728 722 739 728 711 71	B 2 7 3 3 2 5 8 6 7 8 1 7 6 6 3	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 105. 0 99. 0 86. 0 76. 0 67	4 9 2 9 3 6 3 2 6 4 .6 .1 .6	0 2.5 0 15.7 0 38.7 0 54.7 0 65.7 0 68.7 0 92.7 0 95.7 0 67.7 0 55.7 0 34.7 0 23.7	9 7 8 1 8 1 3 8 0 6 4 8 5 9	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 51. 0 49. 0 44. 0 36. 0 30. 0 22.	9 0 0 1 2 9 .7 .1 .7 .5 .6 .7 .5 .2	0 2.3 0 3.0 0 3.0 0 6.0 13.0 46.0 0 46.0 0 51.0 0 49.0 0 44.0 0 36.0 0 30.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15.0 0 39.0 0 54.0 0 65 0 0 68 0 0 72 0 0 88 0 9 95 0 0 97 0 0 67 0 0 55 0 0 34 0
11 11 11 11 11 11 11 11 11 11 11 11 11	6 64. 7 65. 8 66. 9 69 69 10 72 11 75 12 78 13 80 14 82 15 82 17 80 18 78 19 76 20 73 21 71	.8 602 611 618 623 631 654 674 697 712 728 729 728 718 72	B 2 7 3 3 2 5 8 6 7 8 1 7 6 6 3	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 105. 0 99. 0 86. 0 76. 0 67. 0 59	4 9 2 9 3 6 3 2 6 4 .6 .1 .6 .4	0 2.5 0 15. 0 38.1 0 54. 0 65. 0 68. 0 72. 0 88. 0 92. 0 95. 0 89. 0 76. 0 67. 0 55.	9 7 8 1 8 1 3 8 0 6 4 8 5 9	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 49. 0 44. 0 36. 0 30. 0 22. 0 15.	9 0 0 1 2 9 .7 .1 .7 .5 .6 .7 .5 .2 .1	0 2.3 0 3.0 0 3.0 0 6.0 13.0 46.0 0 48.0 0 51.0 0 49.0 0 44.0 0 36.0 0 30.0 0 22.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15.0 0 39.0 0 54.0 0 65 0 0 68 0 0 72 0 0 88 0 0 92 0 0 95 0 0 67 0 0 67 0 0 34 0 0 23 0
11 11 11 11 11 11 11 11 11 11 11 11 11	6 64. 7 65. 8 66. 9 69 69 10 72 11 75 12 78 13 80 14 82 15 82 16 82 17 80 18 78 19 76 20 73 21 71 22 65	.8 602 611 618 623 631 654 674 697 712 728 729 721 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631 631	B 2 7 3 3 2 5 8 6 7 8 1 7 6 6 3	0 3. 0 29. 0 47. 0 61. 0 75. 0 79. 0 85. 0 94. 0 100. 0 105. 0 99. 0 86. 0 76. 0 67	4 9 2 9 3 6 3 2 6 4 .6 .1 .6 .4 .3 .0	0 2.5 0 15.7 0 38.7 0 54.7 0 65.7 0 68.7 0 92.7 0 95.7 0 67.7 0 55.7 0 34.7 0 23.7 0 16.7	9 7 8 1 8 1 3 8 0 6 4 8 5 9	0 2. 0 3. 0 3. 0 6. 0 9. 0 27. 0 45. 0 47. 0 51. 0 49. 0 44. 0 36. 0 30. 0 22. 0 15.	9 0 0 1 2 9 .7 .1 .7 .5 .6 .7 .5 .2	0 2.3 0 3.0 0 3.0 0 6.0 0 13.0 0 46.0 0 51.0 0 51.0 0 49.0 0 36.0 0 30.0 0 22.0	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 15.0 0 39.0 0 54.0 0 65 0 0 68 0 0 72 0 0 88 0 9 95 0 0 97 0 0 67 0 0 55 0 0 34 0

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

BLDG 2	100 B.	ASERUN	FT LEONARD WO	,02							_	
			Design	<b>-</b>	Weekda	ıv	Satur	day	Sund	,	Monda	
July			Htg Btuh		Htg Btuh		Htg Btuh	Clg Ton	Htg Btuh		Htg Btuh	
Hour	OADB		ntg stun C	21.4	0	12.7	0	12.6	0	12.6	0	12.6 9.2
1		71.0	0	17.7	0	9.2	0	9.2	0	9.2	0	6.8
2	69.8	68.8	0	14.4	0	6.8	0	6.8	0	6.8	0	5.7
3		67.0	0	11.5	0	5.7	0	5.7	0	5.7	0	4.2
4		65.9	0	10.1	0	4.2	0	4.2	0	4.2	0	
5		65.2	0	9.7	0	4.3	0	4.2	0	4.2	0	4.3
6		64.9	0	45.4	0	34.6	0	5.5	0	5.5	0	34.5
7		65.3	0	59.9	0	50.0	0	7.7	0	7.7	0	49.9
8		65.6	0	75.0	0	65.3	0	14.9	0	14.9	0	65.3 78.5
9		65.7	0	85.3	0	78.5	0	27.6	0		0	80.9
10		66.5	0	89.7	0	80.9	0	37.2	0		0	87.4
11		67.9	0	96.6	0	87.4	0	47.1	0		0	98.5
12		69.9	0	106.2	0	98.5	0	57.0	0		0	
13		71.3	0	111.4	0	102.4	0	60.6	O		0	
14		72.5	0	114.3	0	105.2	0	63.7	c		0	
15		73.9 75.3	0	109.1	0	100.1	0	64.5	C		0	
16	89.8		0	95.8	0	86.1	0	60.9	(		0	
17		75.5	0	87.5	О	75.2	0	55.3	(		-	
18		76.2	0	75.6	0	65.1	0	48.0	(		0	
19		76.7	0	71.6	0	58.4	0	42.3	(	42.3	0	
20		78.6	0	65.2	0	36.7	0	35.9	1	35.9	0	
21		78.8	0	44.7	O	30.0	0	29.7	1	29.7	c -	
22		78.0		32.8	c	22.2	0	21.9		0 21.9	0	
23		75.4		26.5	c	16.1	o	16.0		0 16.0	(	16.1
24												
	,,,,	, ,,,,,										
		,,,,,			Wee)	day	Sat	urday		nday	Moi	nday
Augus	st		Desi	ign		day		urday	Htg Btu	h Clg Ton	Htg Btul	n Clg Ton
<b>A</b> ugui Hour	st O <b>A</b> DI	B OAWB	Desi Htg Btuh	ign	Htg Btul			Clg Ton	Htg Btu	h Clg Ton O 4.7	Htg Btul	n Clg Ton 0 4.7
Augus Hour 1	0 <b>A</b> D1 68.	B OAWB	Desi Htg Btuh	lgn Clg Ton	Htg Btul	Clg Ton	Htg Btul	Clg Ton	Htg Btu	h Clg Ton 0 4.7 0 3.3	Htg Btul	n Clg Ton 0 4.7 0 3.3
Augur Hour 1 2	68.0 67.0	B OAWB 0 65.3 0 63.5	Desi Htg Btuh O	ign Clg Ton 11.5	Htg Btul	Clg Ton	Htg Btul (	Clg Ton	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0	Htg Btul	n Clg Ton 0 4.7 0 3.3 0 3.0
Augur Hour 1 2	OADI 68.0 67.0	B OAWB 0 65.3 0 63.5 2 62.2	Desi Htg Btuh O O	Clg Ton 11.5, 9.1	Htg Btuh (	1 Clg Ton 2 4.7 3.3	Htg Btul ( (	Clg Ton 4.7 3.3 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0	Htg Btul	10 Clg Ton 10 4.7 10 3.3 10 3.0 10 3.0
Augur Hour 1 2 3	OADI 68.0 67.0 65.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1	Htg Btuh  O  O  O	Clg Ton 11.5 9.1 7.0	Htg Btuh	1 Clg Ton 2 4.7 3.3 3.0	Htg Btul ( ( (	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0	Htg Btul	10 Clg Ton 4.7 0 3.3 0 3.0 0 3.0 0 3.0
Augur Hour 1 2 3 4	OADI 68.0 67.0 66. 65.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1	Htg Btuh  O  O  O  O  O	Clg Ton 11.5 9.1 7.0	Htg Btul	1 Clg Ton 2 4.7 3.3 3.0 3.0	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0
Augur Hour 1 2 3 4 5	OADI 68.4 67.4 66. 65.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7	Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5 9.1 7.0 5.4 3.8 4.1	Htg Btul	1 Clg Ton 2 4.7 3 3.3 5 3.0 6 3.0 7 3.0	Htg Btuh	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0	Htg Btul	10 Clg Ton 10 4.7 10 3.3 10 3.0 10 3.0 10 3.0 11 19.6
Augur Hour 1 2 3 4	OADI 68.1 67.1 66. 65. 65.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1	Desi	Clg Ton 11.5 9.1 7.0 5.4 3.8 4.1 31.2	Htg Btul	1 Clg Ton 2 4.7 3 3.3 5 3.0 6 3.0 6 3.0 7 3.0	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 19.6 0 40.3
Augus Hour 1 2 3 4 5 6	OADD 68.0 67.0 66. 65. 65. 65.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 60.2 8 61.2	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5 9.1 7.0 5.4 3.8 4.1 31.2 46.7	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 0.3.0 0.3.0 0.40.3 0.40.3 0.53.2	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 19.6 0 40.3 0 53.2
Augui Hour 1 2 3 4 5 6	OADD 68.0 67.0 66. 65. 65. 65.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 60.1 8 61.2	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 0.3.0 0.3.0 0.40.3 0.53.2 0.64.2	Htg Btuh	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 19.6 0 40.3 0 53.2
Augui Hour 1 2 3 4 5 6 7 8	OADI 68.0 67.0 66.0 65.0 65.0 65.71.74.0	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 60.7 8 61.2 6 61.2 2 62.3 3 63.4	Desi Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.	Htg Btuh	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0	Htg Btul	Clg Ton 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2
Augui Hour 1 2 3 4 5 6 7 8 9	OADI 68. 67. 66. 65. 65. 65. 68. 71.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 2 62.3 3 63.6	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.	Htg Btuh	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0 0 35.5	Htg Btul	Clg Ton 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2 0 66.9
Augun Hour 1 2 3 4 5 6 6 7 7 8 9	OADI 68. 67. 66. 65. 65. 65. 68. 71. 74.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 2 62.3 3 63.6	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.	Htg Btuh	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0	Htg Btul	Clg Ton 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8
Augun Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 12	68. 67. 66. 65. 65. 65. 66. 71. 74.	B OAWB 0 65.3 0 65.3 0 65.3 6 62.2 6 61.1 4 60.7 8 61.2 6 61.2 6 62.3 3 63.4 7 65.	Desi Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.3.0 0.	Htg Btuh	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.5 0 44.4 0 47.6	Htg Btul	Clg Ton 4.7 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2
Augun Hour 1 2 3 4 5 6 6 7 8 8 9 10	OADI 68.0 67.0 66. 65. 65. 65. 71. 74. 77. 80.	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 60.7 8 61.2 6 61.2 7 65.3 9 66.4	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 40.3 60 40.3 64.2 66.9 67.8 68.9 75.8 68.2 68.2 68.3	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.5 0 44.4 0 47.6	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2
Augun Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 12 12 12 12 12 12 12 12 12 12 12	OADI 68.4 67.66.65.65.65.71.74.77.80.883.885.855.855.855	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 2 62.9 3 63.0 7 65. .9 66. .4 68. .0 69.	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 40.3 640.3 640.3 666.9 75.8 685.2 689.7 686.6	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.5 0 44.4 0 47.6 0 50.7	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7
Augur Hour 1 2 3 4 5 6 6 7 8 8 9 10 11 12 13 14 14 15 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	OADI 68.4 67.66.65.65.65.71.74.77.80.883.885.568.857.83	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 7 65. 9 66. 4 68. 0 69. 0 70.	Desi Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 81.6	Htg Btul	Clg Ton 4.7 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 40.3 640.3 66.9 66.9 75.8 89.7 89.7 93.0 86.6 73.6	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.5 0 44.4 0 47.6 0 50.7 0 49.9	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  40.3  64.2  66.9  75.8  85.2  89.7  93.0  86.6
Augur Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 12 12 12 12 12 12 12 12 12 12 12	OADI 68.4 67.4 66.6 65.65.65.71.74.77.80.883.883.885.5	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 7 65. 9 66. 4 68. 0 69. 0 70. 0 70.	Desi Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 0 81.6 73.1	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  40.3  64.2  66.9  67.8  85.2  89.7  93.0  86.6  73.6  63.6	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 47.0 0 47.6 0 47.6	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 19.6 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7 0 93.0 0 86.6
Augunt Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 11 11 11 11 11 11 11 11 11 11 11	OADI 68.4 67.4 66.65.65.65.71.77.80.83.883.885.578388819978	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 7 65. 9 66. 4 68. 0 69. 0 70. 0 70.	Desi Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 81.6 73.1	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  40.3  64.2  66.9  75.8  89.7  89.7  93.0  86.6  73.6  73.6  63.6  51.8	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0 0 27.0 0 35.5 0 44.4 0 47.6 0 50.7 0 49.9 0 47.5	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7 0 93.0 0 86.6 0 73.6
Augur Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 11 11 11 11 11 11 11 11 11 11 11	OADI 68.4 67.4 66.65.65.65.71.77.80.883.883.885.5783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.885.783.785.785.785.785.785.785.785.785.785.785	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 7 65. 9 66. 4 68. 0 69. 6 70. 7 70. 7 70.	Desi Htg Btuh O O O O O O O O O O O O O O O O O O O	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 0 81.6 0 73.1 0 63.2 0 56.9	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  40.3  64.2  66.9  75.8  89.7  89.7  93.0  86.6  73.6  63.6  63.6  51.8	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0 0 27.0 0 47.6 0 47.6 0 47.5 0 42.0 0 33.2	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 19.6 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7 0 93.0 0 86.6 0 73.6 0 63.6
Augur Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OADI 68.4 67.4 66.65.65.65.65.66.8 71.74.77.80.883.883.885.5885.7888881897888189788	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 7 65. 9 66. 4 68. 0 69. 6 70. 7 70. 7 70. 7 70.	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 81.6 73.1 63.2 56.9 0 43.9	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0 0 27.0 0 47.6 0 47.6 0 47.5 0 42.0 0 33.2 0 33.2	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7 0 93.0 0 86.6 0 73.6 0 63.6 0 51.8
Augur Hour 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 11 11 11 11 11 11 11 11 11 11 11	OADD 68.4 67.66.65.65.65.65.66.871.77.880.883.885.5885.78838819788978	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 60.2 8 61.2 7 65. 9 66. 0 69. 0 70. 0 70. 1 71. 9 72. 8 71.	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 81.6 73.1 10 63.2 10 56.9 10 43.9 10 26.2	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 7.0 0 27.0 0 27.0 0 47.6 0 47.6 0 47.6 0 47.5 0 42.0 0 33.2 0 28.5	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7 0 93.0 0 86.6 0 73.6 0 73.6 0 51.8 0 36.0 0 22.6 0 16.4
Augur Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 8 9 10 11 12 11 11 11 11 11 11 11 11 11 11 11	OADD 68.4 67.4 66.65.65.65.65.66.8 71.74.80.883.885.688.774.77.880.883.885.774.77.880.883.885.774.77.880.883.885.774.77.880.775.775.775.775.775.775.775.775.775.77	B OAWB 0 65.3 0 63.5 2 62.2 6 61.1 4 60.7 8 61.2 6 61.6 7 65. 9 66. 4 68. 0 69. 6 70. 7 70. 7 70. 7 70.	Desi Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 11.5, 9.1 7.0 5.4 3.8 4.1 31.2 46.7 62.8 75.3 76.9 83.7 91.9 99.8 103.6 96.4 81.6 73.1 63.2 56.9 0 43.9	Htg Btul	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btuh	Clg Ton  4.7  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3	Htg Btu	h Clg Ton 0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 3.0 0 47.0 0 47.6 0 47.6 0 47.6 0 47.5 0 42.0 0 33.2 0 28.5 0 22.0	Htg Btul	0 4.7 0 3.3 0 3.0 0 3.0 0 3.0 0 3.0 0 40.3 0 40.3 0 53.2 0 64.2 0 66.9 0 75.8 0 85.2 0 89.7 0 93.0 0 86.6 0 73.6 0 51.8 0 36.0 0 22.6

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

			Desig	n	Weekday		Satur	-	Sunday		Monday	
Septem	OADB	ONUT	Htg Btuh		Htg Btuh C		Htg Btuh	Clg Ton	Htg Btuh C		Htg Btuh C	lg Ton 3.0
Hour	61.8	61.5	0	3.4	0	3.0	o	3.0	0	3.0	0	2.9
1		59.7	0	3.0	0	2.9	0	2.9	0	2.9		2.9
2	60.8		0	3.0	0	2.9	0	2.9	0	2.9	0	2.9
3	60.0		0	2.9	o	2.9	o	2.9	0	2.9	0	
4	59.4		0	2.9	0	2.8	0	2.8	0	2.8	0	2.8
5		56.3	0	2.9	0	2.8	. 0	2.8	0	2.8	0	2.8
6		56.1		5.5	0	3.4	0	2.8	0	2.8	0	3.4
7		56.7	0		0	11.0	О	2.9	0	2.9	0	10.8
8		57.9	0	31.5	0	42.5	0	2.9	0	2.9	0	41.9
9		58.6	0	51.3	0	59.0	0	3.1	0	3.1	0	59.2
10		59.6	0	62.6	0	58.8	0	3.3	0	3.3	0	58.8
11	71.6	61.1	0	65.2	0	62.2	0	3.9	0	3.9	0	62.2
12	74.8	52.7	0	68.1		69.7	0	14.6	0	14.6	0	69.7
13	77.2	64.6	0	78.5	0		0	22.0	0	23.3	0	74.6
14	78.9	66.0	0	88.5	0	74.6	0	30.0	0	35.0	0	75.8
15	79.5	67.1	0	91.5	0	75.8	0	36.5	0	38.0	0	73.8
16	78.9	67.5	0	85.6	0	74.7	0	34.3	0	34.3	0	62.1
17	77.4	67.9	0	74.3	0	62.1		27.8	0	27.8	0	51.7
18	75.2	68.0	0	62.6	0	51.7	0		0	23.3	0	36.5
19	72.6	69.3	0	52.7	0	36.5	0	23.3	0	16.7	0	17.5
20	69.9	70.0	0	38.8	0	17.5	0	16.7	0	10.2	0	11.0
21	67.7	69.0	0	18.1	0	11.0	0	10.2	0	4.4	0	5.0
22	65.7	67.3	0	11.3	0	5.0	0	4.4	0	3.1	0	3.1
23	64.0	65.4	0	6.9	0	3.1	0		0	3.0	0	3.0
24	62.	63.6	0	4.1	0	3.0	0	3.0	U	3.0		
					**		Sat	urday	Sund	ay	Mond	ay
Octo	ber		Des	_	Weekd			Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OAD	B OAWB	-	Clg Ton	Htg Btuh	2.9	neg been		. 0	2.9	0	2.9
1	50.	7 45.9			0		Ċ		0	2.9	-6,530	2.9
2	48.	4 44.0			0	2.9			-5,972	2.8	-11,685	2.8
3	46.	3 42.0	-23,075		-2,226	2.8	,		-10,427	2.8	-15,934	2.8
4	44.	6 40.8	-25,149		-7,291	2.8			-68,714	2.8	-58,359	2.6
5	43.	4 39.7	-25,707		-39,394	2.8	-30,594		-76,686	2.8	-81,804	2.8
6	42.	6 39.1	-24,766		-73,780	2.8	-66,989	=	-80,148	2.7	-84,576	3.3
7	42.	3 38.9	-29,671	3.3	-75,844	3.3	-70,80		-75,156	2.8	-78,025	3.
E	43.	4 39.8	-66,214		-70,574		-66,15	_	-62,231		-63,295	4.
9	46.	3 41.	-43,14	1 4.4	-55,753		-54,17		-8,780		-38,885	4.
10	50	.7 43.0	-19,81	4.9	-38,885		-39,02		-8,780		-20,888	4.
1:	56	0 45.	7	0 5.1	-20,888		-20,92		0		0	
1	2 61	.2 49.	1	0 5.4	0			0 3.3	0		0	
1		.6 52.	3	0 5.6	0			0 3.5	0		0	
1		.5 54.	1	0 5.8	0	5.3		0 3.6		3.6	0	
1		.6 54.		0 5.9	o	5.4		0 3.6	_		0	
1		.3 54.		0 5.6	d	5.1		0 3.6				
1		.5 54.		0 4.9	c	4.4		0 3.5				
1		.3 54.		0 4.3	c	3.9		0 3.3				
		.6 55.	-	0 3.7	(	3.4		0 3.2				
		.5 55.		0 3.2		3.1		0 3.1				
						3.0	)	0 3.0	(	3.0		
2	1 = 1	2 54	5	0 3.1								
2		.2 54.				3.0		0 3.0		3.0		
2 2 2	2 56	.2 54. .6 52.	.4	0 3.0		3.0 0 3.0	)	0 3.0		3.0 9 2.9 0 2.9	c	

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

BLDG 2	100 8	ASERUR	FI DECKARD NO								M 4	
Novemb			Design		Weekda	у	Satur		Sunda	-1	Monday Htg Btuh C	
	OADB	OAWB	Htg Btuh C		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh			2.8
Hour	43.8	40.3	-1,799	2.8	-55,282	2.8	-56,430	2.8	-95,877	2.8	-102,505	2.8
1 2	42.0	38.9	-5,719	2.8	-66,783	2.8	-68,308	2.8	-112,699	2.8	-120,195	2.7
	40.5		-23,128	2.7	-77,182	2.7	-77,546	2.7	-123,602	2.7	-130,829 -142,903	2.7
3		36.3	-90,537	2.7	-84,945	2.7	-85,288	2.7	-135,936	2.7	·	2.7
4	39.4	35.8	-92,896	2.7	-94,134	2.7	-94,456	2.7	-146,171	2.7	~154,632	2.7
5		35.6	-95,891	2.7	-97,557	2.7	-136,054	2.7	-150,300	2.7	-187,004	2.7
6	38.4	36.3	-90,820	2.6	-94,730	2.7	-135,973	2.7	-148,697	2.7	-187,601	3.3
7		38.2	-79,929	3.3	-85,815	3.3	-126,053	2.7	-138,311	2.7	-112,446	3.8
8	41.0	40.6	-63,990	3.8	-74,869	3.8	-113,686	2.8	-125,497	2.8	-92,733	4.4
9	43.8	42.8	-48,668	4.5	-60,577	4.4	-93,709	2.9	-104,476	2.9	-73,570	4.9
10			-33,073	5.2	-42,768	4.9	-68,963	3.1	-40,541	3.1	-45,825	
11		45.4	-13,470	5.4	-29,777	5.0	-48,907	3.3	-19,144	3.3	-29,777	5.0
12		47.5	-13,4,0	5.5	-19,129	5.1	-32,102	3.4	-12,989	3.4	-19,129	5.1
13		49.2		5.7	-7,889	5.2	-16,418	3.5	-8,504	3.5	-7,689	5.2
14		50.0	0		-4,468	5.2	-7,103	3.5	-2,607	3.5	-4,468	5.2
15	59.9	50.3	0	5.8		5.2	0	3.5	0	3.5	0	5.2
16	59.7	50.1	0	5.7	0		-2,721	3.3	-2,721	3.3	0	4.8
17	59.0	50.0	0	5.3	0	4.8	-2,,22		. 0	3.2	0	4.1
18	57.9	50.8	0	4.5	0	4.1	-4,939		-4,939	3.0	0	3.6
19	56.4	51.0	0	3.9	0	3.6	-		-8,488	2.9	0	3.2
20	54.6	49.7	0	3.3	0	3.2	-8,488 -14,358		-9,655	2.9	0	2.9
21	52.5	48.2	0	2.9	0	2.9	-14,356		-43,146	2.9	0	2.9
22	50.3	46.2	0	2.9	0	2.9	-57,514		-65,700		-26,243	2.8
23	48.1	44.0	-21,041	2.9	-26,243	2.8	-78,366		-86,434		-48,499	2.8
24	45.9	42.4	-52,225	2.8	-44,352	2.8	-78,300					
					**	4	Sat	urday	Sun	day	Mond	му
Decer			Desi		Week			Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OADE		Htg Btuh		-	Clg Ton 2.6	-190,233		-248,377		-261,066	2.6
1	32.1		-162,594	2.6	-188,844	2.6	-210,327		-271,173	2.6	-309,597	2.6
2	30.2	27.8	-170,539	2.5	-210,102		-223,382		-286,059	2.6	-328,448	2.6
3	28.5	25.9		2.5	-223,171		-270,524		-309,226	2.5	-350,091	2.5
4	27.	24.9	-262,084	2.5	-236,883		-302,535				-362,170	2.5
5	26.	24.0	-264,882	2.5	-249,496		-319,30				-380,211	2.5
6	25.	23.6	-263,424	2.5	-319,133						-385,145	2.5
7	25.	2 23.3	-261,128	2.5	-323,921		-324,080				-306,390	3.1
8	25.	8 24.0	-220,512	3.1	-248,603		-324,47				-264,269	3.6
9	27.	5 25.7	-193,734	3.6	-215,280		-310,33				-222,592	4.2
10	30.	2 27.9	-161,931	4.2	-186,725		-281,81	_			-177,995	4.7
11	. 33.	4 30.3	-124,633	4.9	-158,305		-247,31	-			-146,097	4.8
12	36.	9 32.7	-88,588	5.1	-133,077		-210,75				-120,712	4.8
13	40.	2 35.1		5.3	-108,163		-175,76				-92,137	5.0
14	42.	8 36.9	-55,944	5.5	-80,041		-136,77			-	-80,341	5.0
15	44.	6 38.1	-52,420	5.5	-70,366		-123,81			_		5.0
16	45.	2 38.5	-50,258	5.5			-114,27					4.6
17		9 38.7		5.1								3.9
18	44.	3 39.6		4.3			-101,22					3.5
19	43.	3 39.6		3.7					_	_		3.0
20	41.	9 38.6	-108,005									2.7
21	40.	2 37.	1 -137,449									2.7
22	2 38.	3 35.	3 -169,608									
2	3 36.	2 33.	4 -190,629									
24	4 34.	1 31.	4 -206,169	2.6	-171,14	9 2.7	-227,49	93 2.0	J -230,44		- ,	

BUILDING TEMPERATURE PROFILES - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

1 1 1 1 1 1

Day Type

----- Room Number -----Temperature 1 2 3 4 5 6 7 Range (F) 90.0 75.0 82.2 84.4 85.8 80.3 75.0 Max. Temp. 4 18 1 3 4 17 4 17 8 16 4 17 5 17 Mo./Hr. 2 1 2 2 2 2 1 Day Type Number of Hours .... 0 0 0 0 0 0 Above 100 0 0 0 0 0 95 - 100 0 0 0 0 0 0 0 90 - 95 0 0 450 0 0 1,027 0 85 - 90 0 354 2,616 2,323 112 0 80 ~ 85 2,372 0 1,440 2,472 1,323 4,645 0 2,273 75 - 80 3,088 8,760 5,987 3,672 1,942 4,003 4,873 70 - 75 0 0 979 0 2,722 0 3,887 65 - 70 0 0 0 0 0 60 - 65 0 0 0 0 0 0 55 - 60 0 0 0 0 0 0 0 50 - 55 0 0 0 0 0 0 Below 50 70.2 72.5 70.0 70.2 70.0 70.1 69.9 Min. Temp. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 Mo./Hr.

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 2100 OA NIGHTIME FT LEONARD WOOD

MONTHLY ENERGY CONSUMPTION----

	ELEC	DEMAND	GAS	GAS DMIND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	85,309	248	716	4
Feb	76,603	248	581	4
March	86,696	255	245	2
April	78,510	255	0	0
May	109,972	370	0	0
June	119,685	421	0	0
July	129,180	442	0	0
Aug	125,659	424	0	0
Sept	104,464	379	0	0
Oct	83,686	255	0	0
Nov	79,024	255	0	0
Dec	83,288	248	739	4
Total	1,162,077	442	2,281	4

Building Energy Consumption =

56,082 (Btu/Sq Ft/Year)

Floor Area = 74,789 (Sq Ft)

Source Energy Consumption = 162,321 (Btu/Sq Ft/Year)

Trane Air Conditioning Economics By: Trane Customer Direct Service Network

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD 

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	85,959	248	1,633	6
Feb	77,949	248	1,429	5
March	88,280	255	870	4
April	78,855	255	0	1
May	108,962	368	0	0
June	118,996	421	0	0
July	131,786	442	0	0
λυq	124,928	424	0	0
Sept	103,152	379	0	0
Oct	84,780	255	117	1
Nov	81,185	255	398	2
Dec	84,575	248	1,700	5
Total	1,169,408	442	6,147	6

61,586 (Btu/Sq Ft/Year) Building Energy Consumption =

Floor Area = 74,789 (Sq Ft)

Source Energy Consumption = 168,766 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 2100 BASERUN FT LEONARD WOOD

------EQUIPMENT ENERGY CONSUMPTION-----

Monthly Consumption -----Total Ref Equip Dec Oct Nov May June July Aug Sep Mar Apr Feb Jan Num Code 266,597 22798 21667 23744 21406 23059 21451 21667 0 LIGHTS 23059 23744 21406 22374 20222 85.3 ELEC 85.3 85.3 85.3 85.3 85.3 85.3 85.3 85.3 85.3 85.3 85.3 85.3 PK 37903 34586 36976 36441 35121 37903 34586 36976 34586 35121 428,839 1 MISC LD 36048 32590 117.3 ELEC 117.3 117.3 117.3 117.3 117.3 117.3 117.3 117.3 117.3 117.3 117.3 PK 0 2 MISC LD 0 0 0 0 0 0 0 0 0 0 0 0 0.0 0.0 GAS 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 0 3 MISC LD 0 0 0 0 0 0 0 0 0 0 0 0 0.0 OIL 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 4 MISC LD ٥ 0 0 0 Ó 0 0 0 0 0 0 0 0.0 P STEAM 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 0 5 MISC LD 0 0 n 0 0 Ω 0 0 0 0 0 P HOTH20 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 PK 6 MISC LD 0 0 n 0 0 0 0 0 0 0 0 0 P CHILL 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 AIR-CLD RECIP >45 TONS 126.768 1 E01100L 0 0 35178 28718 17979 0 0 17902 26992 0 0 0 105.0 ELEC 0.0 0.0 0.0 91.6 105.0 103.9 84.0 102.0 0.0 0.0 0.0 0.0 PK CONDENSER FANS 1 EQ5200 12,524 0 0 0 1729 2765 3504 2889 1637 0 0 0 0 ELEC 11.8 0.0 0.0 11.7 10.6 0.0 9.5 11.8 11.8 0.0 0.0 0.0 0.0 PK CHILLED WATER PUMP C.V. 17,383 1 EQ5001 0 0 0 2587 4729 3595 3422 0 0 3051 0 0 0.0 0.0 0.0 6.6 6.6 6.6 0.0 0.0 6.6 0.0 0.0 CONTROLS 786 1 E05303 0 0 0 163 117 214 155 0 138 0 0 ELEC 0 0.3 0.0 0.0 0.0 0.3 0.3 0.3 0.3 0.0 0.3 0.0 0.0 0.0 PK AIR-CLD RECIP >45 TONS 2 EQ1100L 0 2,607 0 0 0 0 0 0 0 0 0 2607 . 0 ELEC

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 2100 BASERUN FT LEONARD WOOD

LDG		RUN FT	0.0	0.0	0.0	0.0	65.5	74.3	66.5	0.0	0.0	0.0	0.0	74.3
	PK	0.0												
2	BQ5200			ISER FANS		_	•	257	0	0	0	0	0	257
	EFEC	0	0	0	0	0	0 6.5	7.2	6.4	0.0	0.0	0.0	0.0	7.2
	PK	0.0	0.0	0.0	0.0	0.0	6.3	1.2						
2	EQ5001		CHILL	ED WATER	PUMP C.V			ō	0	0	0	0	0	0
	ELEC	0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	. 0.0	0.0	0.0	•••				
2	EQ5303		CONTR	OLS					9	3	0	0	0	52
	ELEC	0	0	0	0	9	9	21	0.3	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.5	•••			
3	EQ1161		AIR-C	LD COND	COMP <15				25.40	3186	3151	2935	2850	37,396
	ELEC	2872	2612	3005	3010	3224	3348	3662	3540 13.6	12.8	11.8	11.8	11.8	14.2
	PK	11.8	11.8	11.8	11.9	12.8	13.3	14.2	13.6	12.0	11.0			
3	EQ5200		COND	ENSER FAI	NS					272	192	146	106	2,511
	ELEC	112	97	131	198	270	307	350	331 0.8	0.8	0.7	0.5	0.3	0.8
	PK	0.3	0.3	0.4	0.7	0.7	0.8	0.8	0.0	0.0				
3	EQ5303		CONT	ROLS					223	216	223	216	223	2,628
	EFEC	223	202	223	216	223	216	223 0.3	0.3	0.3	0.3	0.3	0.3	0.3
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	•••				
1	EQ4002		BI C	ENTRIF.				4305	4191	3096	0	0	0	19,124
	ELEC	0	0	0	0	3659	3873	4305 13.1	13.1	13.1	0.0	0.0	0.0	13.1
	PK	0.0	0.0	0.0	0.0	13.1	13.1	13.1	13.1					
1	EQ4003		FC (		FAN C.V.			000	990	958	990	958	990	11,651
	ELEC	990	894	990	958	990	958	990 1.3	1.3	1.3	1.3	1.3	1.3	1.3
	PK	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	•			
:	2 EQ4003		FC		FAN C.V.			0775	2775	2686	2775	2686	2775	32,675
	ELEC	2775	2507	2775	2686	2775	2686 3.7	2775 3.7	3.7	3.7	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.,	3.,					
	3 EQ4002		ВІ		FAN C.V		F 3.7.1	5550	5550	5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550		7.5		7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5						
	4 EQ4002				FAN C.V		. 1048	2397	2293	1693	0	0	0	10,056
	ELEC	0	0	0	0	1726				11.2		0.0	0.0	11.2
	PK	0.0	0.0	0.0	0.0	11.2	10.1	11.0						
	4 EQ4003				FAN C.V		<b>, 4</b> 70	486	486	470	486	470	486	5,720
	ELEC	485	439	486	470	486 0.7							0.7	0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.,	•••						
	5 EQ4002				. FAN C.V			) (	0	0	4163	4028	4163	28,467
	ELEC	4163												5.6
	PK	5.6	5.6	5.6	5.6	5.0		, 0.0						

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1

BLDG 2100 BASERUN FT LEONARD WOOD

6	EQ4002		BI CE	NTRIF. F	AN C.V.						0	o	0	8,414
	ELEC	0	0	0	0	1577	1712	2039	1817	1269	0.0	0.0	0.0	9.3
	PK	0.0	0.0	0.0	0.0	9.3	8.8	9.2	6.8	7.9	0.0	0.0	V.0	
6	E04003		FC CE	NTRIF. F	AN C.V.					156	161	156	161	1,897
•	ELEC	161	145	161	156	161	156	161	161	0.2	0.2	0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	. 0.2	0.2	0.2	0.2	0.2			
7	EQ4002		BI CI	ENTRIF. F	AN C.V.					5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550 7.5	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,,,,	,,,			
1	EQ2001		GAS	FIRE TUBE						0	117	398	1700	6,147
	GAS	1633	1429	870	0	0	0	0	0	0.0	1.1	2.3	4.8	5.8
	PK	5.8	4.6	3.7	0.7	0.0	0.0	0.0	0.0	0.0	1.1	2		
1	EQ5020		HEAT	WATER C	IRC. PUN	AP C.V.						1380	2712	11,630
•	ELEC	2540	2447	1824	112	0	0	0	0	0	615	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	3.7	3.7	3	
1	EQ5240		BOII	ER FORCE	D DRAFT	FAN						200	1745	7,483
•	ELEC	1634	1574	1174	72	0	0	0	0	0	396	888	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	2.4	2.4	2.4	2
1	EQ5307		BOI	LER CONTR	OLS							185	363	1,559
	ELEC	340	328	244	15	0	0	0	0	0	83 0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	
2	EQ2001		GAS	FIRE TUE	BE HOT W						0	o	0	0
	GAS	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	EQ5020		HEA	T WATER (	CIRC. PU	MP C.V.				_	231	201	63	947
	ELEC	78	60	201	112	0	0	0	0	0	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	3.7	3.7		
2	P EQ5240		BOI	LER FORC	ED DRAF	r fan				_	140	130	41	610
	ELEC	50	38	130	72	0	0	0	0	0	149 2.4	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	2.4	2.4		
:	2 EQ5307		190	LER CONT	ROLS					_		27	9	127
	ELEC	10	8	27	15			0			31 0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	Ų.J	

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 2100 NIGHT SETBACK FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(xw)	(Therm)	(Thrm/hr)
Jan	84,255	248	1,204	9,
Feb	76,238	248	1,141	9
March	86,815	255	755	8
April	78,855	255	0	3
May	107,108	373	0	0
June	117,360	421	0	0
July	125,300	442	0	0
Aug	122,913	424	0	0
Sept	103,147	379	0	0
Oct	84,508	248	123	2
Nov	79,926	255	337	6
Dec	82,579	248	1,373	9
Total	1,149,006	442	4,933	9

Building Energy Consumption =

59,031 (Btu/Sq Ft/Year)

Floor Area =

74,789 (Sq Ft)

Source Energy Consumption = 164,264 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 2100 NIGHT SETBACK FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION-----

						Monti	hly Consu	mption -						-
Ref Num	Equip -	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS								23744	21406	23059	21451	21667	266,597
	ELEC	22374	20222	23744	21405	23059	22798	21667	23/44 85.3	85.3	85.3	85.3	85.3	85.3
	PK	85.3	85.3	85.3	85.3	85.3	85.3	85.3	83.3	63.3	0011			
1	MISC LD						36441	35121	37903	34586	36976	34586	35121	428,839
	ELEC	36048	32590	37903	34586 117.3	36976 117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
	PK	117.3	117.3	117.3	11/.3	117.3	11.11							
2	MISC LD			0	0	0	0	0	0	0	0	0	0	0
	GAS	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0							
3	MISC LD					0	0	0	0	0	0	0	0	o
	OIL	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	,						
4	MISC LD			_	•	0	0	0	0	0	0	0	0	o
	P STEAM	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0							
5	MISC LD		_		o	0	0	0	0	0	0	0	0	0
	P HOTH20	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	***								
	MISC LD	_	0	o	0	0	0	0	0	0	o	0	0	0
	P CHILL	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0								
	1 EQ1100L	_			CIP >45 !	rons 14826	24652	27933	26109	16600	0	0	О	110,121
	ELEC PK	0.0	_			87.0	102.0	105.4	103.9	91.6	0.0	0.0	0.0	105.4
	1 EQ5200	_		NDENSER C		1390	2506	2835	2630	1592	0	0	0	10,952
	ELEC PK	0.0						11.9	11.7	10.6	0.0	0.0	0.0	11.9
	1 EQ5001	_			TER PUMP		2454	2673	2540	2162		) 0	0	12,203
	ELEC	0.0	_					6.6	6.6	6.6	0.0	0.0	0.0	6.6
	PK	0.0	0.0	, 0.0	,									
	1 EQ5303			ONTROLS	n (	107	111	121	115	5 98	3 (	o 0	0	552
	ELEC	(			-							0.0	0.0	0.3
	PK	0.0	0.0	0.0		,	, ,,,							
	2 EQ1100L				ECIP >45		o (	4438		0 (	<b>5</b> (	p (	0	4,438
	ELEC		0 (	0	0	0 (		- 4430						

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 2100 NIGHT SETBACK FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	0.0	65.5	74.3	66.5	0.0	0.0	0.0	0.0	74.3
2	EQ5200		CONDE	SER FANS			_	200	0	0	o	0	0	399
	BLEC	0	O	0	0	0	0	399	6.4	0.0	0.0	0.0	0.0	7.2
	PK	0.0	0.0	0.0	0.0	0.0	6.5	7.2	0.4	0.0	•••			
2	£Q5001		CHILL	ED WATER					0	0	0	0	0	0
	ELEC	0	0	0	0	0	. 0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
2	EQ5303		CONTR	ols					2	2	0	0	o	31
	ELEC	0	0	0	0	4	2	21	0.3	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0			
3	EQ1161		AIR-C	LD COND	COMP <15	TONS				3186	3151	2935	2850	37,396
	ELEC	2872	2612	3005	3010	3224	3348	3662	3540		11.8	11.8	11.8	14.2
	PK	11.8	11.8	11.8	11.9	12.8	13.3	14.2	13.6	12.8	11.0	11.0		
3	EQ5200		COND	ENSER FAM	ıs						192	146	106	2,511
	ELEC	112	97	131	198	270	307	350	331	272	0.7	0.5	0.3	0.8
	PK	0.3	0.3	0.4	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.5	0.5	
3	BQ5303		CONT	ROLS							222	216	223	2,628
	BLEC	223	202	223	216	223	216	223	223	216	223	0.3	0.3	0.3
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
	1 EQ4002		BIC	CENTRIF.	FAN C.V.							0	o	19,342
	ELEC	0	0	0	0	3933	3949	4053	4205	3202	0	0.0	0.0	13.1
	PK	0.0	0.0	0.0	0.0	13.1	13.1	13.1	13.1	13.1	0.0	0.0	0.0	
	1 EQ4003		FC (	CENTRIF.	FAN C.V.							958	990	11,651
	ELEC	990	894	990	958	990	958	990	990	958	990		1.3	1.3
	PK	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	• • • • • • • • • • • • • • • • • • • •
	2 EQ4003		FC	CENTRIF.	FAN C.V.							0505	2775	32,675
	ELEC	2775	2507	2775	2686	2775	2686	2775	2775	2686	2775	2686	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	-
	3 EQ4002		BI	CENTRIF.	FAN C.V.							5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	5550	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,.5	
	4 EQ4002		BI	CENTRIF.	FAN C.V		•			1704	0	o	0	10,092
	ELEC	0		0	0	1737				1704 11.2			0.0	11.2
	PK	0.0	0.0	0.0	0.0	11.2	10.1	11.2	11.2	11.2	0.0	•••		
	4 EQ4003		FC	CENTRIF.			==	455	486	470	486	470	486	5,720
	ELEC	486			470	486								0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
	5 EQ4002		ві	CENTRIF						1846	4163	4028	4163	37,884
	ELEC	4163	3760			1908								5.6
	PK	5.6	5.6	5.6	5.6	5.0	5 5.6	5.6	5 5.6	5.0				

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 2100 NIGHT SETBACK FT LEONARD WOOD

	EQ4002		BI CE	NTRIF. F	AN C.V.									8,428
•	ELEC	0	0	0	0	1565	1743	2013	1843	1263	0	0	0	9.3
	PK	0.0	0.0	0.0	0.0	9.3	8.8	9.3	9.3	7.9	0.0	0.0	0.0	9.3
6	EQ4003		FC CI	ENTRIF. 1	AN C.V.						151	156	161	1,897
-	ELEC	161	145	161	156	161	156	161	161	156	161 0.2	0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	٠	0.12	
7	EQ4002		BI C	ENTRIF.	FAN C.V.					5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5			
1	EQ2001		GAS	FIRE TUB	E HOT WA	TER						337	1373	4,933
-	GAS	1204	1141	755	0	0	0	0	0	0	123		9.4	9.5
	PK	9.5	9.3	7.9	3.0	0.0	0.0	0.0	0.0	0.0	1.6	6.0	9.4	
1	EQ5020		HEAT	WATER C	IRC. PU	AP C.V.						571	1473	6,643
_	ELEC	1458	1380	970	112	0	0	0		0	578	671	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	3.7	3.7	3.7	
1	EQ5240		BOI	ER FORCE	ED DRAFT	FAN							948	4,274
	ELEC	938	888	624	72	0	0	0	0	0	372	432	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	2.4	2.4	2.4	
1	EQ5307		BOI	LER CONT	ROLS					_	7.6	90	198	890
	ELEC	195	185	130	15	0	0	0	0	0	78	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	
2	EQ2001		GAS	FIRE TU	BE HOT W				_	•	•	0	o	0
	GAS	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5020		HEA	T WATER	CIRC. PU	MP C.V.				_		201	179	1,205
	ELEC	201	164	231	112	0	0	0	0	0	116	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	3.7	3.7	3.,	
2	EQ5240		<b>B</b> 01	LER FOR	ED DRAF					_	74	130	115	775
	ELEC	130	106	149	72	0		0	0			2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	2.4	2.4	F.4	
;	2 EQ5307		BO	LER CON	TROLS					_		27	24	161
	ELEC	27	22	31	15						15 0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 2100 DDC CONTROL FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	83,287	248	703	9
Feb	75,652	248	702	ė
March	86,426	248	403	5
April	78,506	255	0	0
May	103,319	366	0	0
June	113,059	388	0	0
July	119,793	436	0	0
Aug	118,928	391	0	0
Sept	99,000	373	0	0
Oct	83,320	242	0	0
Nov	79,240	255	109	3
Dec	82,164	248	867	8
Total	1,122,695	436	2,784	9

Building Energy Consumption =

54,957 (Btu/Sq Ft/Year)

Floor Area = 74,789 (Sq Ft)

Source Energy Consumption = 157,636 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 2100 DDC CONTROL FT LEONARD WOOD

------ EQUIPMENT ENERGY CONSUMPTION-----

						W	hly Cons	umntion .						
Ref	Equip -						June	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	May	Dune	bully		•				
0	LIGHTS								23744	21406	23059	21451	21667	266,597
	ELEC	22374	20222	23744	21405	23059	22798	21667	85.3	85.3	85.3	05.3	85.3	85.3
	PK	85.3	85.3	65.3	85.3	85.3	85.3	85.3	85.3	63.3	65.5	•		
1	MISC LD									34586	36976	34586	35121	428,839
	ELEC	36048	32590	37903	34586	36976	36441	35121	37903 117.3	117.3	117.3	117.3	117.3	117.3
	PK	117.3	117.3	117.3	117.3	117.3	117.3	117.3	11/.3	117.3	117.0			
2	MISC LD									0	0	0	0	0
	GAS	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•	
3	MISC LD								_	0	0	0	0	o
	OIL	0	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
4	MISC LD								0	0	0	0	0	0
	P STEAM	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••		
5	MISC LD						_	0	0	0	0	0	0	0
	P HOTH20	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •				
€	MISC LD					0	0	0	0	0	0	0	o	0
	P CHILL	0		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	•••						
1	EQ1100L				CIP >45		****	26970	23042	13687	0	0	0	97,043
	ELEC	0					21306 100.2	106.1	101.9	86.6	0.0	0.0	0.0	106.1
	PK	0.0	0.0	0.0	0.0	. /9.4	100.2	100.1	10113					
:	1 EQ5200			NDENSER			2123	2754	2266	1303	0	0	o	9,597
	ELEC	0						11.7	11.4				0.0	11.7
	PK	0.0	0.0	0.0	0.0	8.8	11.4	11.,	12.1					
	1 EQ5001				TER PUME		2374	2560	2514	1791	c	, 0	. 0	11,082
	ELEC	C										0.0	0.0	6.6
	PK	0.0	0.0	0.0	0.0	6.6	, 6.6	6.6	0.0	, 010				
	1 EQ5303			NTROLS	_			116	114	. 81	. (	, 0	, 0	501
	ELEC		) (										0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	, 0.3	V.3	·	, J.				
	2 EQ1100L				ECIP >45			856	; (	n (	, (		o 0	856
	ELEC	,	0 (	0	0	D (	p 0	856	, '	,	•			

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 2100 DDC CONTROL FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	71.4
2	EQ5200		CONDE	SER FANS	;				_		0	0	0	65
-	ELEC	0	0	0	0	0	0	65	0	0	0.0	0.0	0.0	6.8
	PK	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	•••	
2	EQ5001		CHILL	ED WATER	PUMP C.V					o	0	0	0	0
_	ELEC	0	0	0	0	0	. 0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	ó.0	0.0	0.0	0.0	0.0	0		
2	EQ5303		CONTR	ols					_	8	0	0	0	20
	ELEC	0	0	0	0	2	2	8	0	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.3	0.0	• • • • • • • • • • • • • • • • • • • •		
3	EQ1161		AIR-C	LD COND	COMP <15	TONS					3193	2976	2891	37,776
	BLEC	2911	2654	3052	3056	3265	3354	3680	3546	3198	11.8	11.8	11.8	14.2
	PK	11.8	11.8	11.8	11.9	12.8	13.3	14.2	13.6	12.8	11.0	11.0		
3	EQ5200		COND	ENSER FAN	NS						195	148	107	2,535
	ELEC	113	99	133	202	274	308	351	332 0.7	274 0.7	0.7	0.5	0.3	0.8
	PK	0.3	0.3	0.4	0.7	0.7	0.7	0.8	0.7	0.7	•	•••		
3	EQ5303		CONT	ROLS					222	216	223	216	223	2,628
	ELEC	223	202	223	216	223	216	223	223 0.3	0.3	0.3	0.3	0.3	0.3
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	***			
1	L EQ4002		віс	ENTRIF.					3000	2982	0	0	o	18,490
	ELEC	0	0	0	0	3860	3743	3914	3990 13.1	13.1	0.0	0.0	0.0	13.1
	PK	0.0	0.0	0.0	0.0	13.1	13.1	13.1	13.1	1511	•			
	1 EQ4003	•	FC (	CENTRIF.				•••	000	958	990	958	990	11,651
	ELEC	990	894	990	958	990	958	990	990 1.3	1.3	1.3	1.3	1.3	1.3
	PK	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.5				
	2 EQ4003		FC		FAN C.V.			2775	2775	2686	2775	2686	2775	32,675
	ELEC	2775	2507	2775	2686	2775	2686	2775 3.7	3.7	3.7	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.1	J.,					
	3 EQ4002		BI		FAN C.V.			5550	5550	5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550 7.5	7.5	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5						
	4 EQ4002				FAN C.V.		1790	2222	2108	1518	0	0	0	9,281
	ELEC	0	0		0	1643 11.2	10.0	11.2		11.1	0.0	0.0	0.0	11.2
	PK	0.0	0.0	0.0	0.0	11.2	10.0	****						
	4 EQ4003				FAN C.V		470	486	486	470	486	470	486	5,720
	EFEC	486	439		470 0.7	486 0.7	0.7			0.7			0.7	0.7
	PK	0.7	0.7	0.7	U./	0.7	<b>U.</b> 7	• • • •						
	5 EQ4002				. FAN C.V		1846	1908	1908	1846	4163	4028	4163	37,884
	BLEC	4163				1908 5.6							5.6	5.6
	PK	5.6	5.6	5.6	5.6	2.6	5.0							

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3
BLDG 2100 DDC CONTROL FT LEONARD WOOD

_			BT C	ENTRIF. I	AN C.V.									
6	EQ4002	0	0	0	0	1480	1639	1865	1727	1091	0	0	0	7,802 9.3
	ELEC PK	0.0	0.0	0.0	0.0	9.3	8.6	9.3	8.6	8.0	0.0	0.0	0.0	9.3
6	EQ4003		FC C	ENTRIF.	FAN C.V.					156	161	156	161	1,897
	ELEC	161	145	161	156	161	156	161	161 0.2	0.2	0.2	0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	•••			
7	EQ4002		ві с	ENTRIF.	FAN C.V.						5550	5371	5550	65,350
•	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,		
	EQ2001		GAS	FIRE TUE	E HOT WA	TER							0.57	2,784
1	-	703	702	403	0	0	0	0	0	0	0	109	867	8.7
	gas Pk	8.7	7.7	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	7.8	•••
			HEA'	r water (	CIRC. PU	IP C.V.								4 226
1	EQ5020	862	1000	809	0	0	0	0	0	0	0	351	1205	4,226 3.7
	ELEC PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.7	3.7
	FA													
1	EQ5240		BOI	LER FORC				_	0	0	0	226	775	2,719
	ELEC	554	643	521	0	0	0	0	0.0	0.0	0.0	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0			
1	EQ5307		BOI	LER CONT	ROLS						0	47	161	567
	ELEC	116	134	108	0	0	0	0	0	0	0.0	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	
2	EQ2001		GAS	FIRE TU	BE HOT	ATER					_	0	0	0
_	GAS	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
-	EQ5020		HEA	AT WATER	CIRC. PU	JMP C.V.								869
•	ELEC	231	190	145	0	0	0	0	0	0	0	112	190	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.7	3.,
	2 EQ5240		во	ILER FOR	CED DRAF	r fan								559
•	ELEC	149	122		0	0	0	0	0		0		122	2.4
	PK	2.4	2.4		2.4	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.4	2.4
	2 EQ5307		ВО	ILER CON	TROLS							<b>.</b> =	25	117
	ELEC	31	25	20	0	C	) 0	0						0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 2100 ECONOMIZER FT LEONARD WOOD

	ELEC On Peak	DEMAND On Peak	GAS On Peak	GAS DMND On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	83,287	248	703	9
Feb	75,652	248	702	8
March	86,426	248	403	5
April	78,506	255	0	0
May	102,721	366	0	0
June	112,500	388	0	0
July	119,325	436	0	0
Aug	117,921	391	0	0
Sept	98,116	373	0	0
Oct	83,320	242	0	0
Nov	79,240	255	109	3
Dec	82,164	248	867	8
Total	1,119,179	436	2,784	9

Floor Area =

74,789 (Sq Ft)

Building Energy Consumption = 54,796 (Btu/Sq Ft/Year) Source Energy Consumption = 157,155 (Btu/Sq Ft/Year) Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

-----EQUIPMENT ENERGY CONSUMPTION-----

	n					Mont	hly Const	mption -						Total
Ref Num	Equip Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS									21.105	23059	21451	21667	266,597
-	ELEC	22374	20222	23744	21406	23059	22798	21667	23744	21406	85.3	85.3	85.3	85.3
	PK	85.3	85.3	85.3	85.3	85.3	85.3	<b>65.3</b>	85.3	85.3	83.3	63.3	0210	
1	MISC LD							35121	37903	34586	36976	34586	35121	428,839
	ELEC	36048	32590	37903	34586	36976	36441	117.3	117.3	117.3	117.3	117.3	117.3	117.3
	PK	117.3	117.3	117.3	117.3	117.3	117.3	117.5	11,11					
2	MISC LD					_	0	0	0	0	0	o	o	0
	GAS	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••				
3	MISC LD						0	0	0	0	0	. 0	0	0
	OIL	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	***					
4	MISC LD			0	0	0	0	o	0	0	0	0	0	0
	P STEAM	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	•••							
5	MISC LD	. 0	0	o	0	0	0	0	0	0	o	0	o	0
	P HOTH20 PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	s MISC LD												_	0
·	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
:	1 EQ1100L		AI	R-CLD RE	CIP >45					40073	0	0	o	94,667
	ELEC	0	0	0				27382	22119	12873 86.5	0.0	0.0		105.1
	PK	0.0	0.0	0.0	0.0	79.4	100.2	106.1	101.9		0.0	•		
	1 EQ5200			NDENSER			0070	2801	2182	1234	0	0	0	9,384
	ELEC	C						11.7	11.4				0.0	11.7
	PK	0.0	0.0	0.0	0.0	0.0		***						
	1 EQ5001		CH	RILLED WA	TER PUMP					4701	c	, 0	. 0	11,082
	ELEC	(	) (											6.6
	PK	0.6	0.0	0.0	0.0	6.6	6.6	6.6	6.6					
	1 EQ5303			ONTROLS	_		3 107	116	. 114	81	. (	) (	, 0	501
	ELEC		-	-	_	o 83						0.0	0.0	0.3
	PK	0.	0 0.0	0.	0.0	U	, 0.3	0.3						
	2 EQ1100L				ECIP >45		o 0	, C	, (	, (	o (	) (	0	0
	ELEC	•	0	0	0 1	0 (		,	,	•				

Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4
BLDG 2100 ECONOMIZER FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	71.4
,	BQ5200		CONDE	iser fans	ı								_	0
-	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	6.8
	PK	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5001		CHILL	ED WATER	PUMP C.V	•		•		0	o	0	o	0
	ELEC	0	0	0	0	0		ó	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••			
2	EQ5303		CONTR	ors				_	0	8	0	0	0	15
	ELEC	0	0	0	0	2	2	3	0.0	0.3	0.0	0.0	0.0	0.3
	ÞK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.5				
3	EQ1161		AIR-C	LD COND	COMP <15				3546	3198	3193	2976	2891	37,776
	ELEC	2911	2654	3052	3056	3265	3354	3680	13.6	12.8	11.8	11.8	11.8	14.2
	PK	11.8	11.8	11.8	11.9	12.8	13.3	14.2	13.0	12.0				
3	EQ5200		COND	ENSER FAN				251	332	274	195	148	107	2,535
	ELEC	113	99	133	202	274	308	351 0.8	0.7	0.7	0.7	0.5	0.3	0.8
	PK	0.3	0.3	0.4	0.7	0.7	0.7	0.8	0.7	···	•••			
3	EQ5303		CONT				216	223	223	216	223	216	223	2,628
	ELEC	223	202	223	216	223	216 0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	• • • • • • • • • • • • • • • • • • • •				
:	1 EQ4002			ENTRIF.		3050	3743	3914	3990	2982	0	0	0	18,490
	ELEC	0	0	0	0	3860	13.1	13.1	13.1	13.1	0.0	0.0	0.0	13.1
	PK	0.0	0.0	0.0	0.0	13.1	13.1	13.1	25.2					
	1 EQ4003			CENTRIF.			958	990	990	958	<b>9</b> 90	958	990	11,651
	ELEC	990	894	990	958	990	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
	PK	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.5					
	2 EQ4003				FAN C.V.		2686	2775	2775	2686	2775	2686	2775	32,675
	ELEC	2775	2507	2775	2686 3.7	2775 3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.,	3.,						
	3 EQ4002		BI	CENTRIF.	FAN C.V.					5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550 7.5	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,	,			
	4 EQ4002		BI		FAN C.V.			2222	2108	1518	n	0	0	9,281
	ELEC	0	0	0	0	1643	1790	2222	2108 11.1	11.1	0.0	0.0	0.0	11.2
	PK	0.0	0.0	0.0	0.0	11.2	10.0	11.2	11.1	1111	• • • • • • • • • • • • • • • • • • • •			
	4 EQ4003				FAN C.V			405	486	470	486	470	486	5,720
	ELEC	486	439	486	470	486	470	486 0.7	0.7	0.7		0.7	0.7	0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7				
	5 EQ4002		ві		FAN C.V				1908	1846	4163	4028	4163	37,884
	ELEC	4163			4028	1908								5.6
	PK	5.6	5.6	5.6	5.6	5.6	5.6	3.6	5.0	3.0				

			•											
6	EQ4002		B1 C	ENTRIF.	FAN C.V.					1091	0	0	0	7,802
	ELEC	0	0	0	0	1480	1639	1865	1727 8.6	B.0	0.0	0.0	0.0	9.3
	PK	0.0	0.0	0.0	0.0	9.3	8.6	9.3	8.6		0.0			
6	EQ4003		FC C	ENTRIF.	FAN C.V.					156	161	156	161	1,897
	ELEC	161	145	161	156	161	156	161	161	0.2	0.2	0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2			
7	EQ4002		віс	ENTRIF.	FAN C.V.					5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,.5	, • •		
1	EQ2001		GAS	FIRE TU	BE HOT WA					0	0	109	867	2,784
	GAS	703	702	403	0	0	0	0	0.0	0.0	0.0	3.1	7.8	8.7
	PK	8.7	7.7	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
1	EQ5020		HEA	T WATER	CIRC. PU					0	0	351	1205	4,226
	ELEC	862	1000	809	0	0	0	0	0.0	0.0	0.0	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0	• • •		
1	EQ5240		BOI	LER FOR	CED DRAFT				0	0	0	226	775	2,719
	ELEC	554	643	521	0	0	0	0	0.0	0.0	0.0	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0				
1	EQ5307		воз	LER CON		_		0	0	o	0	47	161	567
	ELEC	116	134	108		0	0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	•••				
2	EQ2001				UBE HOT W		0	0	0	0	0	0	0	0
	GAS	0	0	0		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	• • • • • • • • • • • • • • • • • • • •				
2	EQ5020		HE.	AT WATER	CIRC. P		_		0	0	0	112	190	869
	ELEC	231	190			0	0	0.0	0.0	0.0	0.0	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	•			
:	2 EQ5240		во		CED DRAF				0	0	0	72	122	559
	ELEC	149	122				0	0	0.0		0.0	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	•••		-71		
:	2 EQ5307		ВС	ILER CO			_		0	o	o	15	25	117
	ELEC	31						0.0					0.5	0.5
	PK	0.5	0.5	5 O.!	5 0.5	0.0	0.0	0.0	0.0					

By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 2100 OA NIGHTIME FT LEONARD WOOD

----- EQUIPMENT ENERGY CONSUMPTION-----

Ref	Equip -					Mont	hly Const	mption -					D==	Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Iotai
0	LIGHTS										23059	21451	21667	266,597
	RLEC	22374	20222	23744	21406	23059	22798	21667	23744	21405	85.3	85.3	85.3	85.3
	PR	85.3	85.3	85.3	85.3	85.3	85.3	85.3	85.3	85.3	85.3	65.3	63.3	
1	MISC LD							25121	37903	34586	36976	34586	35121	428,839
	ELEC	36048	32590	37903	34586	36976	36441	35121 117.3	117.3	117.3	117.3	117.3	117.3	117.3
	PK	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	11/15				
2	MISC LD				_	•	0	0	o	0	0	o	0	0
	GAS	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••				
3	MISC LD				_	0	0	0	0	0	0	o	0	0
	OIL	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••					
4	MISC LD		_	0	0	0	0	0	0	0	0	0	0	0
	P STEAM	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0							
5	MISC LD					0	0	0	0	0	0	0	0	0
	P HOTH20	0		0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
6	MISC LD	_		0	0	0	0	0	0	0	0	0	0	0
	P CHILL	0						0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	•						
	1 EQ1100L	_			CIP >45		26858	32686	28526	18688	0	0	0	124,812
	ELEC	0						105.0	103.9	91.6	0.0	0.0	0.0	105.0
	PK	0.0	) 0.0	0.0	0.0	0313								
	1 EQ5200		co	NDENSER						1771	0	0	0	12,081
	ELEC	C	) 0	, ,					2815					11.8
	PK	0.0	0.0	0.0	0.0	9.7	11.8	11.8	11.7	10.6	0.0	0.0		
	1 EQ5001		CE		ATER PUME				4543	3117		, 0	. 0	20,739
	BLEC	•	0 (		0 (									6.6
	PK	0.	0 0.0	0.0	0.0	6.6	5 6.6	6.6	0.0	, 0.0	•	-		
	1 EQ5303			ONTROLS			5 193	. 223	205	5 141	. (	, (	) 0	938
	ELEC		-	-	-	0 179					-		0.0	0.3
	PK	0.	0 0.0	0 0.	0 0.	0 0.:	3 0.3	, 0.3	, 5	, ,,,				
	2 EQ1100L				ECIP >45			260	,	0 (	o (	p (	0	2,607
	ELEC		0	0	0	0	0 (	. 200	,	•				

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 2100 OA NIGHTIME FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	0.0	65.5	74.3	66.5	0.0	0.0	0.0	0.0	74.3
2	EQ5200		CONDE	nser fal	15					_		0	0	257
	ELEC	0	0	0	0	0	0	257	0	0	0	0.0	0.0	7.2
	PK	0.0	0.0	0.0	0.0	0.0	6.5	7.2	6.4	0.0	0.0	0.0	0.0	
2	EQ5001		CHILL	ED WATER	R PUMP C.V						0	0	0	0
	ELEC	0	0	0	О	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•	
2	EQ5303		CONTI	ROLS						9	0	0	0	78
	ELEC	0	0	0	0	19	23	12	15	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	•••		
3	EQ1161		AIR-	CLD COND	COMP <15				3540	3186	3151	2935	2850	37,396
	ELEC	2872	2612	3005	3010	3224	3348	3662	3540		11.8	11.8	11.8	14.2
	PK	11.8	11.8	11.8	11.9	12.8	13.3	14.2	13.6	12.8	11.0	11.0		
3	EQ5200		COND	enser fa	MS							146	106	2,511
	ELEC	112	97	131	198	270	307	350	331	272	192		0.3	0.8
	PK	0.3	0.3	0.4	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.5	0.3	•••
3	EQ5303		CONT	ROLS								216	223	2,628
	ELEC	223	202	223	216	223	216	223	223	216	223	216	0.3	0.3
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
1	EQ4002		віс	ENTRIF.	FAN C.V.						0	0	o	19,124
	ELEC	0	0	0	0	3659	3873	4305	4191	3096	0.0	0.0	0.0	13.1
	PK	0.0	0.0	0.0	0.0	13.1	13.1	13.1	13.1	13.1	0.0	0.0	0.10	
1	EQ4003		rc c	ENTRIF.	FAN C.V.					958	990	958	<b>9</b> 90	11,651
	ELEC	990	894	990	958	990	958	990	990		1.3	1.3	1.3	1.3
	PK	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	-1.0	
2	EQ4003		FC C	ENTRIF.	FAN C.V.					2686	2775	2685	2775	32,675
	ELEC	2775	2507	2775	2686	2775	2686	2775	2775	3.7	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,	J.,	-	
3	EQ4002		BI	ENTRIF.	FAN C.V.						5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,.,		
4	EQ4002				FAN C.V.		,		2293	1693	o	0	0	10,056
	ELEC	0	0	0	0	1726		2397	11.2	11.2	0.0	0.0	0.0	11.2
	PK	0.0	0.0	0.0	0.0	11.2	10.1	11.0	11.2	****	•••			
4	EQ4003				FAN C.V.		470	486	486	470	486	470	486	5,720
	ELEC	486	439	486	470	486	470 0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	•••					
5	EQ4002				FAN C.V.		0	o	0	o	4163	4028	4163	28,467
	ELEC	4163	3760	4163	4028	0.0	0.0			0.0	5.6	5.6	5.6	5.6
	PK	5.6	5.6	5.6	5.6	0.0	0.0	0.0						

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 2100 OA NIGHTIME FT LEONARD WOOD

6	EQ4002		BI CE	NTRIF. F	AN C.V.									
٥	ELEC	0	0	0	0	1577	1712	2039	1817	1269	0	0	0	8,414
	PK	0.0	0.0	0.0	0.0	9.3	8.8	9.2	8.6	7.9	0.0	0.0	0.0	9.3
6	EQ4003		FC CI	ENTRIF. F	AN C.V.								161	1,897
	RLEC	161	145	161	156	161	156	161	161	156	161	156 0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
7	EQ4002		BI CI	ENTRIF. 1	FAN C.V.						5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371 7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.3	,	,,,		
1	EQ2001		GAS	FIRE TUB					_		0	0	739	2,281
	GAS	716	581	245	0	0	0	0	0	0.0	0.0	0.0	3.8	3.8
	PK	3.6	3.5	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	
1	EQ5020		HEAT	WATER C	IRC. PUN			_		0	116	183	1928	6,923
	ELEC	2137	1641	903	15	0	0	0	0.0	0.0	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	3	•••	-	
1	EQ5240		BOII	ER FORCE				_	0	0	74	118	1241	4,454
	ELEC	1375	1056	581	10	0	0	0	0.0	0.0	2.4	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	2			
1	EQ5307		BOII	LER CONTI			_		0	0	15	25	258	928
	BLEC	287	220	121	2	0	0	0	0.0	0.0	0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5		
2	EQ2001		GAS	FIRE TU	ве нот w						0	0	0	0
	GAS	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
2	EQ5020		HEA	T WATER	CIRC. PU	MP C.V.						183	123	891
	ELEC	116	108	231	15	0	0	0	0	0	116 3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	3.7	3.7	3.,	
;	EQ5240		BOI	LER FORC	ED DRAFT	FAN				_		118	79	574
	ELEC	74	70	149	10	0		0	0		74 2.4	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0	0.0	2.4	2.4		
;	2 EQ5307		вог	LER CONT					_	_		25	16	119
	ELEC	15	15	31	2			0			15 0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	3.3	

Trane Air Conditioning Economics By: Trane Customer Direct Service Network

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 2

BLDG 2100 OA DAYTIME FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	84,872	255	1,101	5
Feb	76,921	255	858	4
March	87,511	255	513	3
April	78,510	255	0	0
May	108,538	360	0	0
June	117,207	375	0	0
July	127,047	388	0	C
Aug	123,196	379	0	c
Sept	102,625	368	0	C
Oct	84,303	255	58	1
Nov	80,403	255	266	1
Dec	83,693	255	1,031	4
Total	1,154,827	388	3,827	:

Building Energy Consumption = 57,818 (Btu/Sq Ft/Year) Source Energy Consumption = 163,504 (Btu/Sq Ft/Year)

74,789 (Sq Ft) Floor Area =

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 2100 OA DAYTIME FT LEONARD WOOD

----- EQUIPMENT ENERGY CONSUMPTION-----

вf	Equip -					Montl	June	July	Aug	Sep	Oct	Nov	Dec	Total
um:	Code	Jan	Feb	Mar	Apr	May	June	_	nug					
0	LIGHTS									21406	23059	21451	21667	266,597
	ELEC	22374	20222	23744	21406	23059	22798	21667	23744		85.3	85.3	85.3	85.3
	PK	85.3	85.3	85.3	85.3	85.3	85.3	85.3	85.3	85.3	85.3	65.3	03.3	
1	MISC LD							35121	37903	34586	36976	34586	35121	428,839
	ELEC	36048	32590	37903	34586	36976	36441	117.3	117.3	117.3	117.3	117.3	117.3	117.3
	PK	117.3	117.3	117.3	117.3	117.3	117.3	117.3	111.5	11,.0				
2	MISC LD				_	0	0	0	0	0	0	0	0	c
	GAS	0	0	0	0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•				
3	MISC LD			_		0	0	0	0	0	0	o	0	(
	OIL	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
	PK	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0					
4	MISC LD				0	0	0	o	0	0	0	0	o	
	P STEAM	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •					
5	MISC LD			_	_	0	0	0	o	0	0	0	0	
	P HOTH20	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0							
ε	MISC LD			0	0	0	0	0	0	0	o	0	0	
	P CHILL	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0							
:	EQ1100L				CIP >45 ? 0	rons 17306	25185	33318	26992	17424	0	0	o	120,2
	ELEC	0				77.3	88.3	101.1	91.1	82.2	0.0	0.0	0.0	101
	PK	0.0	0.0	0.0	0.0	77.3	00.5	10111						
	1 BQ5200			NDENSER			2400	3240	2636	1646	0	0	0	11,6
	BLEC	O						11.0	9.9				0.0	11
	PK	0.0	0.0	0.0	0.0	8.5	9.8	11.0	3.3	,,,				
	1 EQ5001				TER PUMP		3475	4729	3595	2520	0	· c	0	17,
	ELEC	C							6.6					
	PK	0.0	0.0	0.0	0.0	6.6	0.6	0.0	5.0					
	1 EQ5303			ONTROLS			157	214	163	114		) (	0	
	ETEC	•	•	_									0.0	
	PK	0.	0.0	0.0	0.0	0.3	, 0.3	· •••	· · ·					
	2 EQ1100L		A		BCIP >45				ı (		s (	, ,	0	
	ELEC		0	0	0 (	, (	, (	) 0	,	, ,	'			

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 ELDG 2100 OA DAYTIME FT LEONARD WOOD

BLDG	2100 CA	DAYTIME FT	LEONARD	WOOD										
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5200		CONDE	NSER FAI	(5					_		0	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5001		CHILL	ED WATE	R PUMP C.V					o	o	0	o	0
	RTEC	0	0	0	0	0		0	0 0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	-	
2	EQ5303		CONT					_	9	0	0	0	0	37
	ELEC	0	0	0	0	9	9	9 0.3	0.3	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	•••			
3	EQ1161		AIR-	CLD COND	COMP <15				25.40	3186	3151	2935	2850	37,396
	ELEC	2872	2612	3005	3010	3224	3348	3662	3540 13.6	12.8	11.8	11.8	11.8	14.2
	PK	11.8	11.8	11.8	11.9	12.8	13.3	14.2	13.6	12.0				
3	BQ5200		COND	ENSER FA	ns					272	192	146	106	2,511
	ELEC	112	97	131	198	270	307	350	331 0.8	0.8	0.7	0.5	0.3	0.8
	PK	0.3	0.3	0.4	0.7	0.7	0.8	0.8	0.6	0.0	0.,	•		
3	EQ5303		CONT					223	223	216	223	216	223	2,628
	ELEC	223	202	223	216	223	216 0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	PK	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0	***				
1	EQ4002				FAN C.V.	3004	4101	4565	4439	3279	0	0	0	20,267
	EFEC	0	0	0	0 0.0	3884 13.1	13.1	13.1	13.1	13.1	0.0	0.0	0.0	13.1
	PK	0.0	0.0	0.0	0.0	13.1	13.1							
1	EQ4003		FC C	ENTRIF.	FAN C.V.						***	958	990	11,651
	ELEC	990	894	990	958	990	958	990	990	958	990 1.3	1.3	1.3	1.3
	PK	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5		
2	EQ4003		FC (	CENTRIF.	FAN C.V.					2686	2775	2686	<b>2</b> 775	32,675
	ELEC	2775	2507	2775	2686	2775	2686	2775 3.7	2775 3.7	3.7	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.,				
3	EQ4002		BI		FAN C.V.					5371	5550	5371	5550	65,350
	ELEC	5550	5013	5550	5371	5550	5371	5550 7.5	5550 7.5	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.3	7.3	,,,				
4	EQ4002				FAN C.V.	4705	1948	2397	2293	1693	0	0	o	10,056
	ETEC	0	0	0	0.0	1726 11.2	10.1	11.0	11.2	11.2	0.0	0.0	0.0	11.2
	PK	0.0	0.0	0.0	0.0	11.2	10.1	11.0						
4	EQ4003				FAN C.V.	486	470	486	486	470	486	470	486	5,720
	ELEC	486	439	486 0.7	470 0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	PK	0.7	0.7	0.7	0.7	v.,	<b>0.</b> 7	2.7						
5	EQ4002				FAN C.V.		0	0	o	0	4163	4028	4163	28,467
	ELEC	4163	3760	4163	4028 5.6	0.0	0.0	0.0	0.0	0.0	5.6	5.6	5.6	5.6
	PK	5.6	5.6	5.6	5.0	0.0	0.0							

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 2100 OA DAYTIME FT LEONARD WOOD

6	EQ4002		BI CE	TRIF. F	M C.V.					1269	0	0	0	8,414
-	BLEC	0	0	0	0	1577	1712	2039	1817	7.9	0.0	0.0	0.0	9.3
	PK	0.0	0.0	0.0	0.0	9.3	8.8	9.2	8.8	7.5	•••			
_	EQ4003		FC CE	NTRIF. F	AN C.V.					156	161	156	161	1,897
٥	ELEC	161	145	161	156	161	156	161	161	156	0.2	0.2	0.2	0.2
	PK	0.2	0.2	0.2	0.2	0.2	.0.2	0.2	0.2	0.2	0.2			
,	EQ4002		BI CE	NTRIF. F	AN C.V.					5371	5550	5371	5550	65,350
•	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	7.5	7.5	7.5	7.5	7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	,.,			
,	EQ2001		GAS I	FIRE TUBE	HOT WA	TER		_	o	0	58	266	1031	3,827
•	GA8	1101	858	513	0	0	0	0	0.0	0.0	1.1	1.5	4.4	5.4
	PK	5.4	4.1	3.3	0.0	0.0	0.0	0.0	0.0	•••				
1	EQ5020		HEAT	WATER C	IRC. PU				0	0	347	1018	2100	8,482
•	EFEC	1876	1764	1361	15	0	0	0	0.0	0.0	3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	•••				
1	EQ5240		BOII	ER FORCE	D DRAFT			_	0	0	223	655	1351	5,458
-	ELEC	1207	1135	876	10	0	0	0	0.0	0.0	2.4	2.4	2.4	2.4
	PK	2.4	2.4	2.4	2.4	0.0	0.0	0.0	0.0					
1	EQ5307		BOI	LER CONTI				•	0	0	47	136	281	1,137
-	EFEC	251	237	183	2	0	0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •				
	2 EQ2001		GAS	FIRE TU	BE HOT			_	0	0	0	0	0	0
	GAS	0	0	0	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
	2 EQ5020		HEA	T WATER	CIRC. P				0	0	231	123	179	1,074
	BTEC	131	164	231	15			0			3.7	3.7	3.7	3.7
	PK	3.7	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0				
	2 805240		во	LER FOR	ED DRAF			_	, 0	. 0	149	79	115	691
	ELEC	84	106	149	10		0 0						2.4	2.4
	PK	2.4	2.4	2.4	2.	4 0.	0 0.0	0.0	, 0.0	, 0.0	_**			
	2 EQ5307		во	ILER CON					n (	) O	31	16	24	144
	BLEC	18	22			-	0 0		_	-			0.5	0.5
	PK	0.5	0.5	0.5	0.	5 0.	0 0.0	٠.٠ ر						

## **COMPUTER SIMULATIONS**

**BUILDING 4109** 

# E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN 18-Mar-93

DATE: BUILDING NO .:

4109

BLDG. TYPE:

OFFICERS CLUB

### **ENERGY CONSTANT CALCULATIONS**

ECC	30000 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	28820 CFM *	1952 HR/YR			
ECHC	30000 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	28820 CFM *	5840 HR/YR			
NSUCHO	45308 kWH -	39497 kWH	_ =	6.91E-05 kWH/CFM-HR	
Ţ	28820 CFM *	2920 HR/YR			
NSUCC	45308 kWH -	39497 kWH	=	2.07E-04 kWH/CFM-HR	
	28820 CFM *	976 HR/YR			
DDCCHC	39497 kWH -	30000 kWH	=	5.64E-05 kWH/CFM-HR	
	28820 CFM *	5840 HR/YR			
DDCCC	39497 kWH -	30000 kWH		1.69E-04 kWH/CFM-HR	
	28820 CFM *	1952 HR/YR			
NSC	792.6 MBtu -	741.7 MBtu	<b>=</b>	9.68E+03 Btu/UA	
	5257				
DSC	741.7 MBtu -	628.4 MBtu	=	2.16E+04 Btu/UA	
	<b>52</b> 57				
OPT	(2 HR/DAY X 272 DAY	/YR) – <b>29</b> 4	HR/YR		
				250 HR/YR	
CHWR	(0.915 kW X 0.012 Eff. X	632 HRS X 2 Degrees	of Reset)		
			=	13.9 kWH/TON	
OAR	506 HR/YR *	0.01	=	5.06 HR/YR	

### EMCENGINEERS. INC. 01-Mar-93 DATE: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BHS BY: 3204.000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 4109Z1R1 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: OFFICERS CLUB - ZONE 1 (RM 1) BLDG NO: PACKAGE STORE / BARBER SHOP **BLDG FUNCTION:** # FLOORS 1 2,187 FLOOR AREA: (SQ. FT) 102 SLAB PERIMETER: (FT) I. AREAS: ([ ] FIELD VERIFIED ELEVATION PLANS) **EAST** WEST TOTAL SOUTH · NORTH 635 1,377 0 0 743 WALLS, GROSS (SQ. FT) 29 0 29 0 0 (SQ. FT) GLASS 22 22 0 0 0 PERSONNEL DOOR (SQ. FT) 0 0 0 0 0 OVERHEAD DOOR (SQ. FT) 1,326 584 743 0 0 (SQ. FT) WALLS, NET (SQ. FT) 2,187 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 22 0 PERSONNEL DOOR (SQ. FT) OVERHEAD DOOR 0 0 0 BASEMENT WALLS 0 (SQ. FT) II. CONSTRUCTION: ([ ] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) COMPONENTS **R-VALUE** WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 2. 4" FACE BRICK 0.43 4"FACE BRICK 0.91 AIR SPACE 3 AIR SPACE 1.89 4. 6" CMU 6"CMU 0.91 AIR SPACE 1/2" GYPSUM BOARD 0.45 AIR SPACE 0.68 INSIDE AIR FILM 1/ GYPSUM BOARD TOTAL R-WALL = 5.44 0.184 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM 0.34 **BUILT UP ROOF** 2. BUILT-UP ROOF 2" RIGID INSULATION 6.68 3. 2" RIGID INSIXATION METAL DECKING 0.00 4 METAL DECKING 1.00 CEILING AIR SPACE 5. CEILING AIR SPACE 1.79 **ACOUSTIC TILE** ACOUSTIC TILE 0.68 INSIDE AIR FILM 10.65 TOTAL R-ROOF = U = 1/R0.094 R-GLASS 1.61 DOUBLE PANE **GLASS TYPE:** 0.67 SLF CONCRETE SLAB TYPE FLOOR: 0.00 R-BASEM. NONE **BASEMENT TYPE:** 0.00 R-ODOOR OVERHEAD DOOR TYPE: NONE R-PDOOR 2.56 METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 X CFM / SQ.FT. 0.000 TIGHT WALL H/M/L (SQ.FT.) 158 0.115 = 1377 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0 0.000 = X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 1.600 X CFM /OPENING /HR DOOR OPENINGS / HR - SINGLE DOOR 1.385 28 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 186 = TOTAL INFILTRATION (CFM) 0 X DOOR 'U' 0.000 **UA ODOOR** = ODOOR AREA 0 9 0.391 22 X DOOR "U" **UA PDOOR** = PDOOR AREA 244 0.184 X WALL 'U' **UA WALL** = WALL AREA 1,326 205 X ROOF 'U' 0.094 = ROOF AREA 2,187 **UA ROOF** 18 0.621 = X GLASS 'U' 29 = GLASS AREA **UA GLASS** 68 0.670 = X SLF 102 = SLAB PERIM. **UA SLAB** 0 X BASE. "U" 0.000 = O =B-WALL AREA UA BASEM. 193 X A. T. F. 1.035 186 INFILTRATION CFM 736 TOTAL UA (BTU/HR°F)

ROJECT: EEA!		S, INC.				_		01-Mar-93
		KPANSION FEASI		υY		-	BY:	3204.000
CLIENT CONTRA	ACT NO.: D	ACA 41-92-C-0	098			-	IOB:	
CLIENT PROJ. E	NG.: DOUG	3 CAGE				_	CHK:	AJN
OCATION: FT I	LEONARD \	WOOD				Ī	ILE:	4109Z2R2
	BUILD	DING HEATIN	G LOAD	CALCU	LATION S	SHEET		
BLDG NO:	4109							
SLDG NO. SLDG FUNCTION:		ADMINISTRATIO			<u>, , , , , , , , , , , , , , , , , , , </u>			
LOOR AREA: (SC		3,420		,		1	FLOORS _	1
SLAB PERIMETER		100						
ADEAC, // 1 EII	ei n veniele	D ELEVATION PLA	MC)					
AHEAS: ([ ] FIE	ELD VENIFIC		NORTH	SOUTH	EAST	WEST	TOTAL	
VALLS, GROSS		(SQ. FT)	1,350	0			1,350	
BLASS		(SQ. FT)	94	0		0	94	·
PERSONNEL DOC		(SQ. FT)	44	0			0	
OVERHEAD DOOF	R	(SQ. FT) (SQ. FT)	1,212	0	<del> </del>	<u> </u>	1,212	
NALLS, NET	CELLING AR	EA IF ATTIC IS UNC				(SQ. FT)	3,420	
OVERHEAD DOOF		(SQ. FT)	0	PERSONN	EL DOOR	(SQ. FT)	44	
BASEMENT WALL	.S	(SQ. FT)	0	0		0	0	
		LD VERIFIED WALL	, ROOF, WIN	IDOW, DOC	OR TYPES)			
WALLS: (SKETCH	I CROSS SE	CTION OF WALL)				COMPONEN		R-VALUE
						OUTSIDE A		0.17 0.43
	<i>√</i> 1	_ /I "EA/	CE BRICK			4" FACE BR		0.43
-11	1 / N	AIR S	PACE			6' CMU		1.89
1		6"C				AIR SPACE		0.91
1	A. A.	G C	PACE		6.	1/2" GYPSU	M BOARD	0.45
∥*	A A	/\"C	YPSUM BOA	RD.	7.	INSIDE AIR		0.68
		2 9	11 20 W DOL	•		TOTAL R-		5.44
		1					U=1/R	0.184
						COMPONEN	TS	R-VALUE
ROOF: (SKETCH	CROSS SEC	CHON OF ROOF)			1	OUTSIDE A		0.17
1			BUILT-UP R	00F		BUILT UP R		0.34
<del>                                      </del>	HITTITI		2" RIGIL II		3.	2" RIGID IN	SULATION	6.68
(11)13)			METAL DE	CKING		METAL DEC		0.00
يعظم لهشوا يعشم		· /			5	CEILING AL	R SPACE	1.00
المرابط المرا	:#O= /*C/*C	•	CEILINGA	IR SPACE		100:15	THE	4 70
		•	CEILINGA ACOUSTIC	TILE		ACOUSTIC		1.79
		•	CEILING A ACOUSTIC	TILE		INSIDE AIR	FILM	0.68
		•	CEILING A ACOUSTIC	IR SPACE		INSIDE AIR	FILM ROOF =	0.68 10.65
		•	CEILING <i>A</i> ACOUSTIC	TILE		INSIDE AIR	FILM	0.68 10.65
GI ASS TYPE:		•	CEILING A ACOUSTIC	TILE		INSIDE AIR	FILM ROOF = U=1/R	0.68 10.65 0.094
GLASS TYPE: SLAB TYPE FLOO	DR:		CEILING A ACOUSTIC	TILE		INSIDE AIR	FILM ROOF = U=1/R R-GLASS SLF	0.68 10.65 0.094 1.61 0.67
SLAB TYPE FLOC BASEMENT TYPE	:	DOUBLE PANE CONCRETE NONE	CEILING A ACOUSTIC	TILE		INSIDE AIR	FILM ROOF = U=1/R R-GLASS SLF R-BASEM.	0.68 10.65 0.094 1.61 0.67 0.00
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO	: PR TYPE:	DOUBLE PANE CONCRETE NONE NONE	CEILING A 4COUSTIC	TILE		INSIDE AIR	FILM ROOF = U=1/R R-GLASS SLF R-BASEM. R-ODOOR	0.68 10.65 0.094 1.61 0.67 0.00
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DO	: PR TYPE: OR TYPE:	DOUBLE PANE CONCRETE NONE	CEILING A 4COUSTIC	TILE		INSIDE AIR	FILM ROOF = U=1/R R-GLASS SLF R-BASEM.	0.68 10.65 0.094 1.61 0.67 0.00
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION	:: PR TYPE: OR TYPE:	DOUBLE PANE CONCRETE NONE NONE	CEILING A 4COUSTIC	TILE	7	INSIDE AIR TOTAL R-	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR R-PDOOR	0.68 10.65 0.094 1.61 0.67 0.00 0.00
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M	E: OR TYPE: OR TYPE: I: I/L (SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL	4COUSTIC	X CFM / S	7 SQ.FT.	INSIDE AIR	FILM ROOF = U=1/R R-GLASS SLF R-BASEM. R-ODOOR	0.68 10.65 0.094 1.61 0.67 0.00
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M AVG. WALL H/M/I	E: OR TYPE: OR TYPE: I: I/L (SQ.FT.) L (SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL	CEILING A ACOUSTIC	TILE	SQ.FT.	INSIDE AIR TOTAL R-	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR R-PDOOR	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/I AVG. WALL H/M/I LEAKY WALL H/M	E: OR TYPE: OR TYPE: I/L (SQ.FT.) L (SQ.FT.) M/L (SQ.FT.)	DOUBLE PANE CONCRETE NONE NONE METAL	4COUSTIC	X CFM / S X CFM / S X CFM / S	SQ.FT.	0.000 0.115 0.000 0.1600	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR R-PDOOR = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/I AVG. WALL H/M/I LEAKY WALL H/M	E: OR TYPE: OR TYPE: I: I/L (SQ.FT.) L (SQ.FT.) M/L (SQ.FT.) S / HR — SIN	DOUBLE PANE CONCRETE NONE NONE METAL M	4COUSTIC	X CFM / S X CFM / S X CFM / S X CFM / O X CFM / O	SQ.FT. SQ.FT. SQ.FT. DPENING /HI	0.000 0.115 0.000 1.600 1.385	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M AVG. WALL H/M/I LEAKY WALL H/M/I DOOR OPENING	E: OR TYPE: OR TYPE: I: I/L (SQ.FT.) L (SQ.FT.) M/L (SQ.FT.) S / HR — SIN	DOUBLE PANE CONCRETE NONE NONE METAL M	1350	X CFM / S X CFM / S X CFM / S X CFM / O X CFM / O	SQ.FT. SQ.FT. SQ.FT. DPENING /HI	0.000 0.115 0.000 1.600 1.385	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/I AVG. WALL H/M/I LEAKY WALL H/M DOOR OPENING DOOR OPENING	E: OR TYPE: OR TYPE: I: I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) S/HR - SIN S/HR - DC	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS	1350	X CFM / S X CFM / S X CFM / S X CFM / O X CFM / O TOTAL IN	SQ.FT. SQ.FT. SQ.FT. DPENING /HI DPENING /HI DPENING /HI	0.000 0.115 0.000 0.115 0.000 R 1.600 R 1.385 (CFM)	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56 0 155 0
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/I AVG. WALL H/M/I LEAKY WALL H/M DOOR OPENING DOOR OPENING	E: OR TYPE: OR TYPE: I/L (SQ.FT.) L (SQ.FT.) M/L (SQ.FT.) S/HR - SIN S/HR - DC	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS  = ODOOR AREA	1350 30	X CFM / S X CFM / S X CFM / S X CFM / O X CFM / O TOTAL IN	SQ.FT. SQ.FT. SQ.FT. DPENING /HI	0.000 0.115 0.000 0.115 0.000 R 1.600 R 1.385 (CFM)	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 2.56 0 155 0 42
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/I AVG. WALL H/M/I LEAKY WALL H/M DOOR OPENING DOOR OPENING UA	E: OR TYPE: OR TYPE: I/L (SQ.FT.) L (SQ.FT.) M/L (SQ.FT.) S/HR - SIN S/HR - DO ODOOR PDOOR	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS  = ODOOR AREA = PDOOR AREA	1350 30	X CFM / S X CFM / S X CFM / S X CFM / O X CFM / O TOTAL IN	SQ.FT. SQ.FT. SQ.FT. DPENING /HI DPENING /HI FILTRATION  X DOOR 'L	0.000 0.115 0.000 0.115 0.000 R 1.600 R 1.385 (CFM)	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56 0 155 0 42 197
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/I LEAKY WALL H/M/I DOOR OPENING DOOR OPENING UA UA	E: OR TYPE: OR TYPE: I/L (SQ.FT.) L (SQ.FT.) M/L (SQ.FT.) S/HR - SIN S/HR - DC	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS  = ODOOR AREA	1350 30 44	X CFM / S X CFM / S X CFM / S X CFM / O X CFM / O TOTAL IN	SQ.FT. SQ.FT. SQ.FT. OPENING /HI DENING /HI DENING /HI X DOOR 'L X DOOR 'L X WALL 'U X ROOF 'L	0.000 0.115 0.000 0.115 0.000 R 1.600 R 1.385 (CFM) P 0.000 P 0.391 0.184	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56 0 155 0 42 197 0 17 223 321
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/ AVG. WALL H/M/ LEAKY WALL H/M/ DOOR OPENING DOOR OPENING UA UA UA	E: OR TYPE: OR TYPE: I/L (SQ.FT.) L (SQ.FT.) ML (SQ.FT.) S / HR - SIN S / HR - DC ODOOR DDOOR WALL	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS  = ODOOR AREA = PDOOR AREA = WALL AREA	1350 30 44 1,212	X CFM / S X CFM / S X CFM / C X CFM / C X CFM / C	SQ.FT. SQ.FT. SQ.FT. DPENING /HI DPENING /HI FILTRATION  X DOOR 'L X DOOR 'L X WALL 'U X ROOF 'L X GLASS '	0.000 0.115 0.000 0.115 0.000 R 1.600 R 1.385 (CFM) I' 0.000 I' 0.391 ' 0.184 I' 0.094 U' 0.621	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = = = = = = = = = = = = = = =	0.68 10.65 0.094  1.61 0.67 0.00 0.00 2.56  0 155 0 42 197 0 17 223 321 56
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/ AVG. WALL H/M/ LEAKY WALL H/M/ DOOR OPENING DOOR OPENING UA UA UA UA UA	E: OR TYPE: OR TYPE: II. (SQ.FT.) II. (SQ.FT.) III. (SQ.FT	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS  = ODOOR AREA = PDOOR AREA = PDOOR AREA = WALL AREA = ROOF AREA = GLASS AREA = SLAB PERIM.	1350 30 0 44 1,212 3,420 94 100	X CFM / S X CFM / S X CFM / C X CFM / C TOTAL IN	SQ.FT. SQ.FT. SQ.FT. DPENING /HI DPENING /HI FILTRATION  X DOOR 'L X DOOR 'L X WALL 'U X ROOF 'L X GLASS '	0.000 0.115 0.000 0.115 0.000 R 1.600 R 1.385 (CFM) I' 0.000 I' 0.391 ' 0.184 I' 0.094 U' 0.621 0.670	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR = = = = = = = = = = = = = = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56 0 155 0 42 197 0 17 223 321 58
SLAB TYPE FLOC BASEMENT TYPE OVERHEAD DOO PERSONNEL DOO III. INFILTRATION TIGHT WALL H/M/ AVG. WALL H/M/ LEAKY WALL H/M/ DOOR OPENING DOOR OPENING UA UA UA UA UA UA UA	E: OR TYPE: OR TYPE: I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT.) I/L (SQ.FT	DOUBLE PANE CONCRETE NONE NONE METAL  M NGLE DOOR DUBLE DOORS  = ODOOR AREA = PDOOR AREA = PDOOR AREA = ROOF AREA = ROOF AREA = GLASS AREA = SLAB PERIM. = B-WALL AREA	1350 30 0 44 1,212 3,420 94 100	X CFM / S X CFM / S X CFM / C X CFM / C TOTAL IN	SQ.FT. SQ.FT. SQ.FT. DPENING /HI DPENING /HI FILTRATION  X DOOR 'L X DOOR 'L X WALL 'U X ROOF 'L X GLASS '	0.000 0.115 0.000 0.115 0.000 R 1.385 (CFM) J' 0.000 J' 0.391 0.184 J' 0.094 U' 0.621 0.670 J' 0.000	FILM ROOF = U=1/R  R-GLASS SLF R-BASEM. R-ODOOR  = = = = = = = = = = = = = = = = = =	0.68 10.65 0.094 1.61 0.67 0.00 0.00 2.56 0 155 0 42 197 0 17 223 321 58

### EMCENGINEERS, INC. DATE: 01-Mar-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS CLIENT CONTRACT NO.: DACA 41-92-C-0098 JOB: 3204.000 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 4109Z3R3 LOCATION: FT LEONARD WOOD FILE: **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: OFFICERS CLUB - ZONE 3 (RM 3) BLDG NO: **COCKTAIL LOUNGE BLDG FUNCTION:** # FLOORS 1,200 FLOOR AREA: (SQ. FT) 68 SLAB PERIMETER: (FT) I. AREAS: ([ ] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL **EAST** NORTH SOUTH 459 0 918 WALLS, GROSS (SQ. FT) 459 0 0 198 0 144 54 (SQ. FT) **GLASS** 42 0 0 42 0 (SQ. FT) PERSONNEL DOOR 0 0 (SQ. FT) 0 0 0 OVERHEAD DOOR 273 0 678 (SQ. FT) 405 0 WALLS, NET (SQ. FT) 1,200 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 0 PERSONNEL DOOR (SQ. FT) 42 (SQ. FT) OVERHEAD DOOR 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([ ] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 4"FACE BRICK 0.91 3. AIR SPACE AIR SPACE 1.89 4. 6" CMU 6"CMU 0.91 5. AIR SPACE 6. 1/2" GYPSUM BOARD 0.45 AIR SPACE 7. INSIDE AIR FILM 0.68 ½"GYPSUM BOARD TOTAL R-WALL = 5.44 0.184 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM **BUILT UP ROOF** 0.34 BUILT-UP ROOF 2º RIGID INSULATION 6.68 2" RIGID INSULATION 3. 0.00 METAL DECKING METAL DECKING 1.00 CEILING AIR SPACE CEILING AIR SPACE **ACOUSTIC TILE** 1.79 ACOUSTIC TILE INSIDE AIR FILM 0.68 10.65 TOTAL R-ROOF = 0.094 U=1/R**R-GLASS** 1.61 DOUBLE PANE GLASS TYPE: 0.83 SLF CONCRETE SLAB TYPE FLOOR: R-BASEM. 0.00 BASEMENT TYPE: NONE R-ODOOR 0.00 NONE **OVERHEAD DOOR TYPE:** 2.56 R-PDOOR METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 X CFM / SQ.FT. 0.000 TIGHT WALL H/M/L (SQ.FT.) 106 X CFM / SQ.FT. 0.115 918 = AVG. WALL H/M/L (SQ.FT.) 0 0.000 = X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR 35 1.385 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 140 TOTAL INFILTRATION (CFM) 0.000 0 X DOOR 'U' **UA ODOOR** = ODOOR AREA 0 16 X DOOR 'U' 0.391 42 **UA PDOOR** = PDOOR AREA X WALL 'U' 0.184 125 678 **UA WALL** = WALL AREA 113 X ROOF 'U' 0.094 = ROOF AREA 1,200 **UA ROOF** 123 X GLASS 'U' 0.621 = GLASS AREA 198 **UA GLASS** 56 0.830 X SLF 68 **UA SLAB** = SLAB PERIM. 0 X BASE. 'U' 0.000 =B-WALL AREA 0 UA BASEM. 145 140 XA.T.F. 1.035 = CFM INFILTRATION = 578 TOTAL UA (BTU/HR°F)

### E M C ENGINEERS, INC. DATE: 03-Mar-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS CLIENT CONTRACT NO.: DACA 41-92-C-0098 JOB: 3204.000 CHK: **CLIENT PROJ. ENG.: DOUG CAGE** AJN LOCATION: FT LEONARD WOOD FILE: 4109Z4R4 BUILDING HEATING LOAD CALCULATION SHEET BLDG NAME: OFFICERS CLUB - ZONE 4 (RM 4) BLDG NO: **BLDG FUNCTION:** BAR - GAME ROOM # FLOORS FLOOR AREA: (SQ. FT) 2,444 SLAB PERIMETER: (FT) 119 I. AREAS: ([ ] FIELD VERIFIED ELEVATION PLANS) **EAST** WEST TOTAL NORTH SOUTH 0 972 1,607 WALLS, GROSS (SQ. FT) 0 635 108 (SQ. FT) 0 36 0 72 **GLASS** (SQ. FT) 0 0 42 PERSONNEL DOOR 0 42 **OVERHEAD DOOR** (SQ. FT) 0 0 0 0 0 1,457 900 WALLS, NET (SQ. FT) 0 557 0 2,444 (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 0 PERSONNEL DOOR 42 OVERHEAD DOOR (SQ. FT) 0 0 0 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([ ] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) **R-VALUE** WALLS: (SKETCH CROSS SECTION OF WALL) COMPONENTS 1. OUTSIDE AIR FILM 0.17 0.43 2. 4" FACE BRICK 4"FACE BRICK 3. AIR SPACE 0.91 AIR SPACE 4. 6" CMU 1.89 6"CMU AIR SPACE 0.91 5. AIR SPACE 1/2" GYPSUM BOARD 0.45 INSIDE AIR FILM 0.68 2"GYPSUM BOARD TOTAL R-WALL = 5.44 U=1/R 0.184 COMPONENTS **R-VALUE** ROOF: (SKETCH CROSS SECTION OF ROOF) 1. OUTSIDE AIR FILM 0.17 0.34 2. BUILT UP ROOF BUILT-UP ROOF 6.68 3. 2" RIGID INSULATION Z" RIGID INSULATION 0.00 METAL DECKING 4. METAL DECKING 5. **CEILING AIR SPACE** 1.00 CEILING AIR SPACE 1.79 **ACOUSTIC TILE** ACOUSTIC TILE 0.68 INSIDE AIR FILM 10.65 TOTAL R-ROOF = 0.094 U = 1/RR-GLASS 1.61 DOUBLE PANE **GLASS TYPE:** SLF 0.67 SLAB TYPE FLOOR: CONCRETE R-BASEM. 0.00 NONE **BASEMENT TYPE:** 0.00 R-ODOOR NONE **OVERHEAD DOOR TYPE:** R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: X CFM / SQ.FT. 0.000 0 TIGHT WALL H/M/L (SQ.FT.) 185 1607 X CFM / SQ.FT. 0.115 AVG. WALL H/M/L (SQ.FT.) 0.000 0 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR = DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 1.385 = 21 206 TOTAL INFILTRATION (CFM) = 0.000 0 X DOOR 'U' **UA ODOOR** = ODOOR AREA 0 = 16 0.391 **UA PDOOR** = PDOOR AREA 42 X DOOR 'U' = 0.184 268 X WALL 'U' 1,457 **UA WALL** = WALL AREA = X ROOF 'U' 0.094 229 2,444 = ROOF AREA **UA ROOF** 67 108 X GLASS 'U' 0.621 **UA GLASS** = GLASS AREA 80 X SLF 0.670 UA SLAB = SLAB PERIM. 119 =B-WALL AREA 0 X BASE, 'U' 0.000 0 UA BASEM. 213 **INFILTRATION CFM** 206 X A. T. F. 1.035 = 873 TOTAL UA (BTU/HR°F)

EMC ENGINEER						DATE:	01-Mar-93
PROJECT: EEAP, EMCS E	XPANSION FEAS	IBILITY STL	JDY			BY:	BHS
CLIENT CONTRACT NO.:	DACA 41-92-C-	0098				JOB:	3204.000
CLIENT PROJ. ENG.: DOU	G CAGE					CHK:	NLA
LOCATION: FT LEONARD	WOOD					FILE:	4109Z4R5
DIW	DINC BEATIN	IC LOAD	CALCIII	ATION S	SUCET		
BUIL	DING HEATIN	IG LUAD	CALCUL	AHONE	PHEET		
BLDG NO: 4109	BLDG NAME:	OFFICERS C	LUB - ZONE	4 (RM 5)			
BLDG FUNCTION:	BALL ROOM						
FLOOR AREA: (SQ. FT)	7,015					# FLOORS	1
SLAB PERIMETER: (FT)	0						
I. AREAS: ([ ] FIELD VERIFIE	ED ELEVATION PLA	NS)					1
I. Albio. ([ ] Lizzo Limit	]	NORTH	SOUTH	EAST	WEST	TOTAL	
WALLS, GROSS	(SQ. FT)	0	0	0	0	0	
GLASS	(SQ. FT)	0	0	0	0	0	
PERSONNEL DOOR	(SQ. FT)	0	0	0	0	0	
OVERHEAD DOOR	(SQ. FT)	0	0	0	0	0	
WALLS, NET	(SQ. FT)	0	0	0	0	0	1
ROOF AREA (OR CEILING AR					(SQ. FT)	7,015	l
OVERHEAD DOOR	(SQ. FT)		PERSONNEL		(SQ. FT)	0	
BASEMENT WALLS	(SQ. FT)	0	0	0	0	0	
II. CONSTRUCTION: ([ ] FIE		., ROOF, WIN	DOW, DOOR	TYPES)		==	
WALLS: (SKETCH CROSS SE	CTION OF WALL)				COMPONEN	TS	R-VALUE
				1.			
12	/1 " TA	CE BRICK		2.			_
	- AIR S	CE DECK		3. 4.			
				<b></b> 5.			
A PA	6"C	MU		5. 6.			
		SPACE.		7.			
	~~~~~~ ½"G	YPSUM BOA	<i>F</i> D	••			
ROOF: (SKETCH CROSS SE	CTION OF BOOF				COMPONEN	TS	R-VALUE
HOOF: (OKETOT: OHOOG OF		· · · · · · · · · · · · · · · · · · ·			OUTSIDE A		0.17
	_	- BUILT-U	P ROOF	2.	BUILT-UP	ROOF	0.34
	TITITI		ADITALLENI d	, 3 .	2" RIGID IN		6.68
 	₹ <i>/</i> -₹ <i>/</i> •• ↓ -• ↓ -•		DECKING	4.			0.00
<u>ا</u>	• -	- CEILIN	GAIR SPACE		CEILING AI		1.00
1 1			TIC TILE	6.	ACOUSTIC	1.79	
		-		7.			0.68
1	1				TOTAL R-		10.65 0.094
					ļ	U=1/R	0.094
					L	R-GLASS	1,61
GLASS TYPE:	DOUBLE PANE					SLF	0.67
SLAB TYPE FLOOR: BASEMENT TYPE:	CONCRETE NONE					R-BASEM.	0.00
OVERHEAD DOOR TYPE:	NONE					R-ODOOR	
PERSONNEL DOOR TYPE:	METAL					R-PDOOR	2.56
III. INFILTRATION:							
TIGHT WALL H/M/L (SQ.FT.)			X CFM / SQ	.FT.	0.000	==	0
AVG. WALL H/M/L (SQ.FT.)			X CFM / SQ		0.000	=	0
LEAKY WALL H/M/L (SQ.FT.)			X CFM / SQ		0.000	=	0
DOOR OPENINGS / HR - SIN	IGLE DOOR		X CFM /OPI		1.600	=	0
DOOR OPENINGS / HR - DC			X CFM /OPI			=	0
			TOTAL INFIL	TRATION (CFM)	=	0
				(DOOD IIII	0.000	=	0
UA ODOOR	= ODOOR AREA	0		DOOR 'U'			0
UA PDOOR	= PDOOR AREA	0					0
UA WALL	= WALL AREA	7.015		(WALL 'U' (ROOF 'U'	0.000 0.094		658
UA ROOF	= ROOF AREA	7,015 0		GLASS 'U		=	0
UA GLASS UA SLAB	= GLASS AREA	U	^	CELOS O			
ILIASIAN		^		YSIF	0 670	=	01
	= SLAB PERIM.	0	<u> </u>	X SLF	0.670	= =	0
UA BASEM. INFILTRATION		0 0 0)	X SLF (BASE. 'U' X A. T. F.			

E M C ENGINEERS, INC. DATE: 03-Mar-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS 3204.000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE LOCATION: FT LEONARD WOOD FILE: 4109Z4R6 **BUILDING HEATING LOAD CALCULATION SHEET** 4109 BLDG NAME: OFFICERS CLUB - ZONE 4 (RM 6) BLDG NO: **DINING ROOM BLDG FUNCTION:** # FLOORS 1,840 FLOOR AREA: (SQ. FT) 40 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL NORTH SOUTH **EAST** (SQ. FT) 0 0 540 0 540 WALLS, GROSS 192 0 192 0 (SQ. FT) 0 **GLASS** 42 0 0 42 0 PERSONNEL DOOR (SQ. FT) 0 0 0 (SQ. FT) 0 0 OVERHEAD DOOR 306 0 306 0 0 WALLS, NET (SQ. FT) ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) ,840 42 0 PERSONNEL DOOR (SQ. FT) (SQ. FT) OVERHEAD DOOR 0 0 0 O 0 **BASEMENT WALLS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE WALLS: (SKETCH CROSS SECTION OF WALL) COMPONENTS 0.17 OUTSIDE AIR FILM 4" FACE BRICK 0.43 2. 4"FACE BRICK AIR SPACE 0.91 3. AIR SPACE 1.89 4. 6" CMU 6"CMU 0.91 AIR SPACE 5. AIR SPACE 1/2" GYPSUM BOARD 0.45 6. 0.68 INSIDE AIR FILM __ %"GYPSUM BOAFD TOTAL R-WALL = 5.44 0.184 U=1/RR-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 1. OUTSIDE AIR FILM 0.17 2. BUILT UP ROOF 0.34 BUILT-UP ROOF 2" INSULATION 6.68 3. 2" RIGID INSULATION METAL DECKING 0.00 4. METAL DECKING 1.00 **CEILING AIR SPACE** CEILING AIR SPACE 1.79 **ACOUSTIC TILE** 6. ACOUSTIC TILE 0.68 INSIDE AIR FILM TOTAL R-ROOF = 10.65 U=1/R 0.094 R-GLASS 1.61 **GLASS TYPE: DOUBLE PANE** SLF 0.67 SLAB TYPE FLOOR: CONCRETE R-BASEM. 0.00 **BASEMENT TYPE:** NONE 0.00 NONE R-ODOOR **OVERHEAD DOOR TYPE:** 2.56 R-PDOOR PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0 0.000 TIGHT WALL H/M/L (SQ.FT.) X CFM / SQ.FT. = 62 0.115 540 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) X CFM / SQ.FT. 0.000 0 LEAKY WALL H/M/L (SQ.FT.) 0 DOOR OPENINGS / HR - SINGLE DOOR X CFM /OPENING /HR 1.600 = 48 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 1.385 = 111 TOTAL INFILTRATION (CFM) = 0 0.000 X DOOR 'U' **UA ODOOR** = ODOOR AREA 0 = 16 X DOOR 'U' 0.391 **UA PDOOR** = PDOOR AREA 42 = 56 X WALL 'U' 0.184 **UA WALL** = WALL AREA 306 = X ROOF 'U' 0.094 173 **UA ROOF** = ROOF AREA 1,840 == 119 X GLASS "U" 0.621 192 **UA GLASS** = GLASS AREA X SLF 27 40 0.670 = SLAB PERIM. **UA SLAB** =B-WALL AREA 0 X BASE. 'U' 0.000 0 UA BASEM. INFILTRATION 114 = **CFM** 111 X A. T. F. 1.035 TOTAL UA (BTU/HR°F) 506

EMC ENGINEERS, INC. DATE: 01-Mar-93 PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: BHS JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE FILE: 4109Z4R7 LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: OFFICERS CLUB - ZONE 4 (RM 7) BLDG NO: **BLDG FUNCTION:** KITCHEN # FLOORS 3,147 FLOOR AREA: (SQ. FT) 135 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL · NORTH SOUTH EAST WEST 1.809 1,202 608 0 WALLS, GROSS (SQ. FT) 0 0 0 0 0 0 (SQ. FT) GLASS 84 0 42 42 0 (SQ. FT) PERSONNEL DOOR 0 0 (SQ. FT) 0 0 0 **OVERHEAD DOOR** 566 0 1.725 0 1,160 (SQ. FT) WALLS, NET (SQ. FT) 3,147 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 84 (SQ. FT) 0 PERSONNEL DOOR OVERHEAD DOOR 0 0 0 **BASEMENT WALLS** (SQ. FT) 0 II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 **OUTSIDE AIR FILM** 0.43 4" FACE BRICK 4"FACE BRICK 0.91 3. AIR SPACE AIR SPACE 1.89 6" CMU 4. 6"CMU AIR SPACE 0.91 AIR SPACE 1/2" GYPSUM BOARD 0.45 0.68 INSIDE AIR FILM 1/ GYPSUM BOARD TOTAL R-WALL = 5.44 U=1/R0.184 R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 0.34 **BUILT UP ROOF** BUILT-UP ROOF 2. 2" RIGID INSULATION 6.68 2" RIGID INSULATION 3. 0.00 **METAL DECKING** METAL DECKING 1.00 CEILING AIR SPACE CEILING AIR SPACE 1.79 **ACOUSTIC TILE** ACOUSTIC TILE INSIDE AIR FILM 0.68 10.65 TOTAL R-ROOF = 0.094 U=1/RR-GLASS 1.61 GLASS TYPE: DOUBLE PANE SLF 0.83 SLAB TYPE FLOOR: CONCRETE R-BASEM. 0.00 BASEMENT TYPE: NONE R-ODOOR 0.00 **OVERHEAD DOOR TYPE:** NONE R-PDOOR 2.56 METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0.000 0 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 208 X CFM / SQ.FT. 0.115 AVG. WALL H/M/L (SQ.FT.) 1809 0.000 0 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR 42 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 1.385 = 250 TOTAL INFILTRATION (CFM) = 0 0.000 UA ODOOR = ODOOR AREA 0 X DOOR 'U' -33 X DOOR 'U' 0.391 = = PDOOR AREA 84 **UA PDOOR** 317 X WALL 'U' 0.184 UA WALL 1,725 = = WALL AREA X ROOF 'U' 295 UA ROOF 0.094 = ROOF AREA 3,147 0 X GLASS 'U' 0.621 **UA GLASS** = GLASS AREA 0 112 **UA SLAB** = SLAB PERIM. 135 X SLF 0.830 = X BASE. 'U' 0 0.000 **UA BASEM.** =B-WALL AREA 0 250 X A. T. F. 1.035 258 INFILTRATION CFM 1,016 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 01-Mar-93 EMC NO.: DATE:

4109R	4109

1/RM1

(BTU/H) (BTU/H) 900 420 1,620 1,320

220 105

225

(BTU/H)

Sensible (BTU/H)

Typical
Application
Theater, Movie Retail store, bank

Degree of Activity

Activity

No. of People

Zone 1/RM1

ŝ

1 Seated at rest 5 Standing, light work, or walking slowly

유

TOTAL

Rates of Heat Gain from Occupants of Conditioned Spaces

TOT Sen. TOT. La

1,740

2,520

TOTAL

				ZONE
8	BHS	벙	4109R1	4109
į	PREPARED BY:	CHECKED BY:	FILE:	BLDG:

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Foctore			
Ž	Fixtures	YDB	Description	Watts/Fixture Total Wattage	Total Wattage
1/RM1	╬		18 Incandescent 60w	60	2
	4	8	20 Incandescent 100w	100	400
	4	9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	336
TOTAL	43			TOTAL	2,836

		П	Т	Т	П	T	Ī	Ī	٦	Ī	1	
	Total BTC											
	Total Wattage											
	Heat Gain to Space(%)											
	Average Wattage to Space (%)											TOTAL
Peak Value for Internal Gains	Description											
	Equip. Type											
	Zone No. of Equip.											
	Zone	1/RM1										

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 – 92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

																								İ	
BLDG	BLDG	TYPE OF							;			Ĩ	OUR	HOUR NUMBER	BER										
TYPE	FUNCTION	PROFILE	F	7	က	4	ις	9	7	8	6	£	10 11 12	12 13	ص 1	4	5	16 1	17 18		19 20 2	121	8	23	24
3	Administration	OCCUPANCY			П		Н	П	F	-	-	Ĭ	8 0	.4 0.B	8	-	_	1 0	5 0.5	5 0	5 0.5	0.5			
_		LIGHTING	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	-	-	0.8	_	-	-	_	-	-	_	_	0.	0	0.1
-		PROCESS						Н	H	Н	Н	Н	_	Н		_	L	L	L			L			

4109

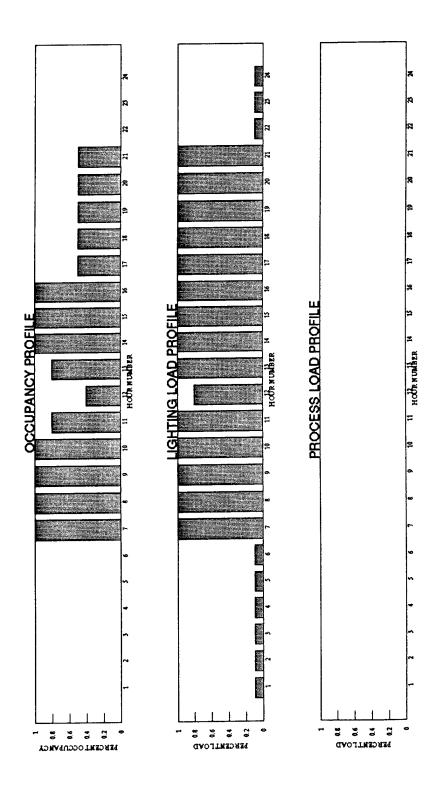
1/FM1

01-Mar-93 3204-000

EMC NO:

BHS CEL 4109R1

DATE: PREPARED BY: CHECKED BY: FILE: BLDG: ZONE:



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

No. of People

Zone No. 2/RM2

æ

8

TOTAL

3204-000 03-Mar-93

BHS CEL 4109R2 4109

2/RM2

ZONE

EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

	Rates of Heat Gain from Occupants of Conditioned Spaces	s of Condition	ed Spaces			
ctivity		Typical	Sensible	Latent	TOT Sen. TOT. La	TOT. Lat
Type	Degree of Activity	Application	(ВТИ/Н)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
4	Seated, light work, typing	Offices, hotels, apts	250	200	200 2,000 1,600	1,600
				TOTAL	2,000	2,000 1,600
-						-

	Total (BTU)	3,584	8,908	5,358	8								18,191
			2,610	1,570	100								5.330
	Heat Gain to Space (%) To	91%	34%	50%	10%								41%
	Average Wattage to Space (%) Total Wattage	350	870	1,570	100								TOTAL
Peak Value for Internal Gains	Description	Microcomputer	5 Printer (laser)	10 Copy Machine	12 Typewriter				The state of the s				the state of the s
	Equip.	3	5	10	12								
	Zone No. of Equip.		3	-	-								
	Zone	2/RM2		•	•		•	•	•				

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

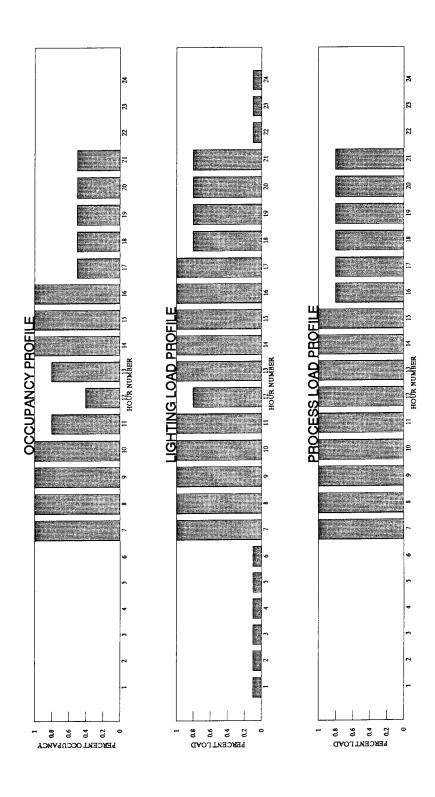
4109R2 BHS CEL EMC NO.:
DATE:
PREPARED BY:
CHECKED BY:
FILE:
BLDG:
ZONE:

03-Mar-93 3204-000

4109

2/FIM2

															Ì										-
BLDG	BLDG	TYPE OF										오	HOUR NUMBER	UMBE	Œ										
TYPE	FUNCTION	PROFILE	-		က	4	5	9	7	8	9	1.	12	13	14	15	16	12	18	19	ଥ	2	2	6	4.
က	Administration	OCCUPANCY							1 1 1 0.8 0.4 0.8 1 1 1 0.5 0.5 0.5 0.5 0.5	-	-	-0.	9.0	0.8	-	•	-	0.5	0.5	0.5	0.5	ı.	-	-	
		LIGHTING	0.1	0.1	0.1 0.1 0.1 0.1 0.1 0.1	0.1	0.1	0.1	-	-	-	-	0.8	-	-	-	-	-	0.8	0.8	0.8	8	0	0	-
		PROCESS							-	_	_	_	-	-	l	1	9.0	9.0	8.0	0.8	0.8	80			<u> </u>



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 –92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 01-Mar-93 DATE: PREPARED BY: CHECKED BY: FILE: EMC NO.:

BHS CEL 4109R3 8

•	Ξ	
?	4	
	4	
	įri.	
:	ਾ	
ł	BLDG	
4	ليہ	
-		

3/FINB

ZONE:

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No. of	Activity	d)	Typical	Sensible	Latent	TOT Sen. TOT. La	TOT. Lat
Ž	People	1	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H)	(BTU/H)
3/0/2	6			Retail store, bank	270	220	540	440
	101	1		Theater, Movie	225	105	2,250	1,050
TOTAL	12					TOTAL	2,790	1,490

										No. of Endison
	scription	Description	Description	Description	Description	Description		Туре	Туре	Туре
			- 60w	ent 60w	ndescent 60w	Incandescent 60w		18	18	18
		W	- 300w	sent 300w	ndescent - 300w	Incandescent 300w	22 Incandescent - 300w	1 22 Incandescent - 300w	1 22 Incandescent – 300w	1 22 Incandescent 300w
		and the same of th								
e	ecription						Incardescent 60w Incardescent 300w	1ype 18 Incardescent - 60w 22 Incardescent - 300w	1ype 18 Incardescent - 60w 22 Incardescent - 300w	1ype 18 Incardescent - 60w 22 Incardescent - 300w
	scriptic					Incandescent – 60w Incandescent – 300w	Incandescent – 60w Incandescent – 300w	Incandescent – 60w Incandescent – 300w	Incandescent – 60w Incandescent – 300w	Incandescent – 60w Incandescent – 300w

		Peak Value for Internal Gains				
No. C	Zone No. of Equip.	Description	Average Wattage to Space (%) Total Wattage	Heat Gain to Space (%)	Total Wattage	Total (BTU)
3	- -	Refrigerator (Frostless	321	32%	321	1,096
			TOTAL	35%	321	1,096

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

01-Mar-93 3204-000 DATE: PREPARED BY: EMC NO.:

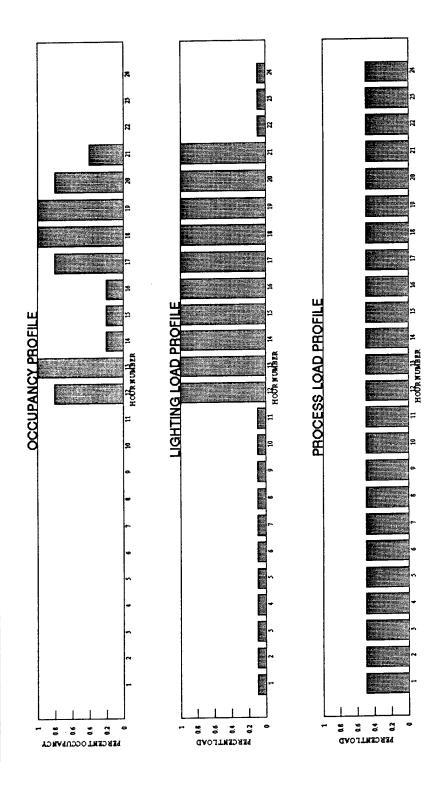
BHS CEL

4109R3

4109

3/FIMB CHECKED BY: FILE: BLDG: ZONE:

BLDG	BLDG	TYPE OF										¥	NO	HOUR NUMBER	3ER										
TYPE	FUNCTION	PROFILE	-	2	က	4	ις L	မ	H	80	6	5		2	6	4	2	10 11 12 13 14 15 16 17 18 19	8	19	8	20 21 22 23	22	23 24	24
2	Cocktail Lnge	OCCUPANCY		F		-	-	H	\vdash	H	Н	H	0	8.0	0	2 0.2	2 0,2	02 02 08		-	80	4.0	H	Н	
)	LIGHTING	0.1	0.1	10	0.1	2.1	2.1).1	0.1	2.1	1.0	-		_		<u> </u>	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	-	-	1	-	0.1	0.1	0.1
		PROCESS	0.5	0.5	0.5	0.5	3.5 (7.5	55) S.C) <u>5</u> C	5 0	5	5.0	5	0	2 0	5 0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 01-Mar-93 ZONE

4/FIM4

EMC NO.:	3204000
DATE: PREPARED BY:	01-Mar-99
CHECKED BY:	핑
FIE:	4109R
BLDG:	4 10

	•	
	4	
	Ö	
:	\sim	

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
			-				TOT	101
7000	No of	Activity		Ivpical	Sensible		101 Sen. 101. La	<u>.</u>
2 4	5 6	1	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
2	Lachie	2				1000	, 000	7 11
WYO/V	7	Ľ	Standing light work or walking slowly	Retail store, bank	270	022	280	<u>ر</u>
1/1		1	The second secon		120	404	275	1 575
	Ť.	•	Seated at rest	I heater, Movie	C277	801	2720	2
							100	,,,,
TOTAL	8					TOTAL	200	3,113
ב כ	1							

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Focture			:
N	Fixtures	Туре	Description	Watts/Fixture Total Wattage	Total Wattage
4/RM4	33	18	Incandescent - 60w	8	1,380
	-	9	6 Fluorescent, 2 - 34w temps, 16w ballast (2x4 ft. fixture)	\$	8
TOTAL	8			TOTAL	2,064

			Peak Value for Internal Gains				
Zone	No. of	Equip.			Heat Gain		Total
Š	Fauipmen Type	TVD	Description	Average Wattage to Space (%) Total Wattage	to Space (%)	Total Wattege	BTG.
4/PM4		69	l arde Screen Television	300	15%	300	1,024
	-	1 2	l ka	109	15%	109	372
•	-	3 8	46 Poncom Machine	009	%29	009	2,048
		2	Refrigerator (Frostless 12 cu. ft.)	321	32%	321	1,096
-							
		_					
				TOTAL	42%	1,330	4,539

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 01-Mar-93 EMC NO.:

DATE: PREPARED BY: CHECKED BY:

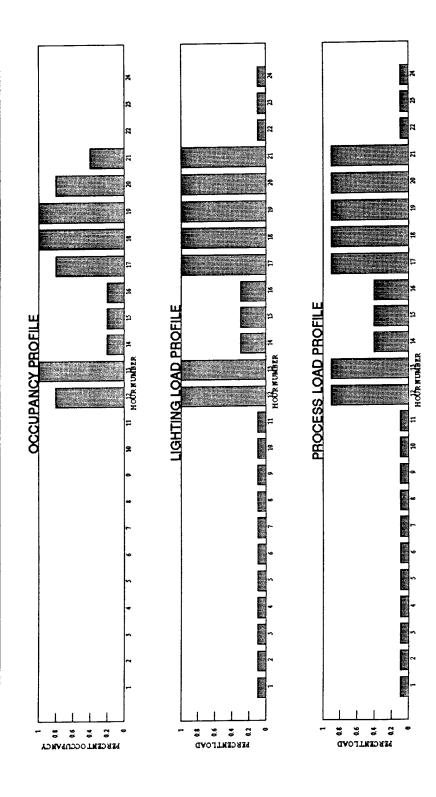
BHS CEL

4109F4

4109

4/FIM4 FILE: BLDG: ZONE:

BLDG	BLDG	TYPE OF										Ŧ	SGR	HOUR NUMBER	EH.										
TYPE	FUNCTION	PROFILE	-	7	3	4	2	9	7	8	6	ē		2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	3	Â	5	9	7 18	19	ଷ	21	Ø	23	24
2	Bar/Game Pm	OCCUPANCY									\vdash	-		0.8 1 02 02 02 08 1 1 0	-	2 0	2	2	3		0.8	0.4			
		LIGHTING	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.1	1.	-	1	3 0	3	3	_	_	_	-	0.1	0.1	0.1
		PROCESS	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	2.1	1.	9	6	4	4	4	60 6	60	60	60	0.1	0.1	0.1



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000

EMC NO.:
DATE:
PREPARED B
CHECKED BY
FILE:
BLDG:

ZONE

4/FIME

01-Mar-93	BHS	핌	4109F5	0077
		.: ∰		

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
Zone	No of	Activit		Typical	Sensible		TOT Sen. TOT. Lat	10T. Let
2	Pacral	1	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
A/DIAR	25		Moderate dancing	Dance hall	305	545	7,625	13,625
2	25		Seated at rest	Theater, Movie	225	105		2,625
TOTAL	2					TOTAL	13,250	13,250 16,250
	3							

Peak Wattage Value for Lights		Total Wa	09	candescent – 300w 3.900 3.900	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture) 84 756			TOTAL 9,156
Peak Wattage V			18 Incandescent - 60w	22 Incandescent - 300w	Fluorescent, 2 - 34w lamps, 1			
	Fixture	Type			9			
	No. of Fixture	Fixtures	75	13	6			42
	Zone	ŝ	4/RM5					TOTAL

		_	Т	T	Т	_	一	7	1	7	_	Т	Т	1	Т	T	7
	Total (BTU)																
	Total Wattage																
	Heat Gain to Space (%)																
	Average Wattage																TOTAL
Peak Value for Internal Gains																	
	Equip.																
	Zone No. of Equip.																
	Zone No.	4/PIM5			•	•	-					•					

E M C Engineers, Inc.

PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY CLIENT CONTRACT NO: DACA 41-92-C-0098 CLIENT PROJ. ENG: DOUG CAGE LOCATION: FT. LEONARD WOOD

3204-000 EMC NO:

01-Mar-93 BHS DATE: PREPARED BY: CHECKED BY:

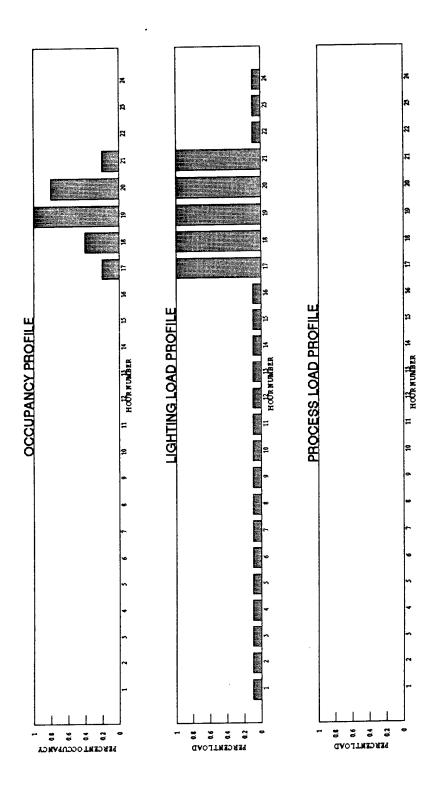
딤

4109F6

4109

4/FIME FILE: BLDG: ZONE:

BLDG	BLDG	TYPE OF				<u>.</u>						오	S N	HOUR NUMBER	ER										
TYPE	FUNCTION	PROFILE		2	3	4	5	9	7	80	6	10 11	1	13	4	15	9	1 12 13 14 15 16 17 18 19 20 21 22 23 24	8	19	8	21	22	23	4
8	Ball Room	OCCUPANCY				r	-		-	-	_	_	L	L	_		L	02	0.4	-	0.8	22			
		LIGHTING	0.1	0	0.1	0.1	1.0	1.0	15.	1.0	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0	0	0.	0.	0.1	0.1	-	-	1	1	1 (0.1 0.1	1.0 1.	.1
		PROCESS				H	-	-	<u> </u>	-	<u> </u>	_	L	L	_						Н		\dashv	\dashv	
THE REAL PROPERTY AND PERSONS ASSESSED.					1	١							l												1



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 –92 –C –0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 01-Mar-93 EMC NO.: DATE: PREPARED CHECKED | FILE: BLDG:

ZONE: 4/PMB

	BHS	CEL	4109F6	4109
i	PARED BY:	CKED BY:		Ċ

			Rates of Heat Gain from Occupants of Conditioned Spaces	or Conditione	dopaces			
Zone	No. of	Activity		Typical	Sensible		TOT Sen. TOT. La	101. La
ŝ	People	TVDB	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BIU/H)	(BIU/H)
4/RMS	40	6.	Seated Fating	Restaurant	225	325	000'6	13,000
						TOTAL	5	43,000
TOTAL	\$	_				IDIAL.	3376	30,5

Peak Wattage Value for Lights	Ure Description Wattack	Incandescent – 60w	21 Incandescent - 150w 750				TOTAL 1,890
Peak Watta		Incandescent - 60w	Incandescent - 150w				
	Focture	18					
	Zone No. of Fixture		5				24
	Zone	4/PM6					TOTAL

	Total (BTU)										
	Total Wattage										
	Heat Gain to Space(%)										
	Average Wattage to Space(%)										
Peak Value for Internal Gains	Description										
	Equip. Type		-								-
	Zone No. of Equip.										_
	Zone No.	4/PIME				•	•	•			

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

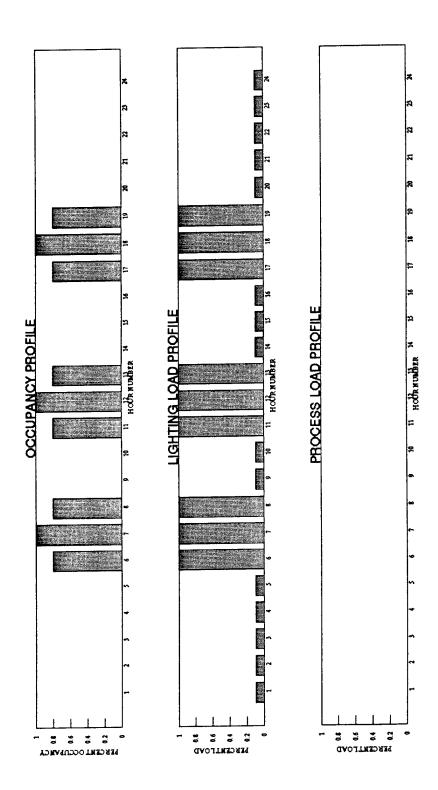
4109 4109F6 BHS CEL Date:
Prepared by:
Checked by:
File:
Bldg:
Zone:

01-Mar-93 3204-000

EMC NO:

4/FIM6

	24		0.1	
	23		<u>.</u>	
	8		<u>.</u>	
	21		0.1 0.1 0.1	
	ଥ		0.1	
	19	0.8	-	
	18	-	-	
	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	80	-	
	16		0.1	
	5		0.1	
Œ	4		1 0.1 0.1 0.1	
MBE	13	0.8	-	
HOUR NUMBER	12	-	-	
至	Ξ	0.8	1	
	9		0.1	
	ြ		1 0.1 0.1	
	80	80	-	
	<u>-</u>		-	
	9	0.8	_	
	S		0.	
	4		0	
	3		0.1 0.1 0.1 0.1	
	2		 	
	-		0	
TYPE OF	PROFILE	OCCUPANCY	LIGHTING	PROCESS
BLDG	FUNCTION	Dining Room)	
BLDG	TYPE	2		



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 03-Mar-93 EMC NO.: DATE:

4/RM7

ZONE:

BHS	CEL CEL	4109R7	4109
PREPARED BY:	CHECKED BY:	FILE:	BLDG:

		Rates of Heat Gain from Occupants of Conditioned Spaces	s of Condition	ed Spaces			
No. of	Activity		Typical	Sensible	Latent	TOT Sen. TOT. La	TOT. Lai
People	Туре	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
5	9	Light bench work	Factory	275	475	2,750	4,750

4,750

2,750

TOTAL

10

TOTAL

Zone No. 4/RM7

			Peak Wattage Value for Lights		
Zone	No. of	Fixture			
Š.	No. Fixtures Type	Туре	Description	Watts/Fixture Total Wattage	Total Wattage
4/RM7	10	18	18 Incandescent - 60w	9	009
	58		6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	4,872
TOTAL	99			TOTAL	5,472

Zone	No. of	Equip.			Heat Gain		Total
_	No. Equipmen Type	Type	Description	Average Wattage	to Space (%)	Total Wattage	(BTU)
<u> </u>	4	24	24 Coffee Maker	1,500	30%	000'9	20,478
₩.	-	88	86 Ice maker	1,089	251%	1,089	3,717
L	-	22	25 Cold Food/Beverage	1,535	20%	1,535	5,239
<u>L.</u> .	7	52	55 Refrigerator/Freezer	326	20%	2,282	7,788
L	2	8	92 Steam Kettle (large), per quart of capacity	88	14%	176	601
1	В	103	103 Griddle/grill (large), per sq.ft. of cooking surface	4,981	40%	14,943	51,000
L	ဇ	92	95 Fryer (deep fat), per lb. of fat capacity	372		1,116	3,809
L	ဇ	=======================================	111 Range (hot top/fry top), per sq.ft. of cooking surface	3,457		10,371	35,396
L	-	108	108 Oven (convection), per cu.ft. of oven space	2,540		2,540	8,669
1	9	84	81 Food Warmer (infrared buld), per lamp	249	100%	747	2,550
1	-	97	97 Oven (large convection), per cu.ft. of oven space	1,304		1,304	4,451
í	-	86	\sim	3,030		3,030	10,341
J	8	88	_	28	100%	99	191
	-	83		1,340	40%	1,340	4,573
١	-	79	79 Dishwasher (conveyor type water sanitizing), per 100dish/hr	339	45%	339	1,157
Ц_				TOTAL	19%	46.868	159 960

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

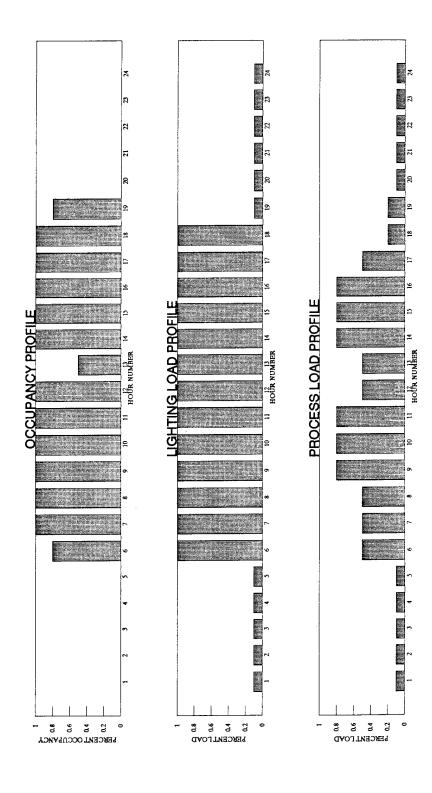
03-Mar-93 BHS CEL 4109R7 DATE:
PREPARED BY:
CHECKED BY:
FILE:
BLDG:
ZONE:

3204-000

EMC NO.:

4/RM7

										오		HOUR NUMBER	~									
_	-	7	က	4	2	9	2	6	9	Ξ	12	13	14	15	16	17	18	61	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	-	2	3 2
		-		-	0	0.8	_		_	-	-	1 0.5	-	-	-	-	1 0.8	80.	L	-		-
0	-	0.1	0.1	0.1 0.1 0.1 0.1 0.1	-		1	_	-	-	-	-	-	-	-	-	-		٠.	0	0	0
_	.1	0.1	0.1	0.1 0.1 0.1 0.1 0.0 0.5 0.5 0.5 0.5 0.8 0.8 0.8 0.5 0.5 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.9 0.0 0.2 0.2 0.1 0.1 0.1 0.1 0.1	1	5 0.	5.0.5	9.6	0.8	8.0	0.5	0.5	8.0	9.0	8.0	5.0	0.7	2	0	0	0	0



01 Card - Job Information

Project: EEAP STUDY, EXPANSION OF EMCS

Location: FT. LEONARD WOOD, MO

Client: US ARMY

Program User: E M C ENGINEERS, INC.

CAR	D 08 Clim	atic Inform	ation		- -			
	Summer	Winter	Summer	Summer	Winter		Summer	Winter
Weather	Clearness	Clearness	Design	Design	Design	Building	Ground	Ground
weather	Clearness			-		0-1	Pofloat	Poflect
Code	Number	Number	Dry Bulb	Wet Bulb	DLA BITD	Orientation	Mariacc	VOLTEC
SPRINGFM	.97	.97	94	78	3	50		

CARD 0	9 Load Sim	ulation P	eriods			
1st Month	Last Month	Peak	1st Month	Last Month	1st Month	Last Month
Cooling	Cooling	Cooling	Summer	Summer	Daylight	Daylight
Simulation	Simulation	Load Hr	Period	Period	Savings	Savings
MAY	SEP		JUN	SEP	APR	OCT

CAR	D 10 L	oad Simulatio	n Paramet	ers		
Cooling	Heating		Airflow	Airflow	Room	Put Wall
Load	Load	Ventilation	Input	Output	Circulation	RA Load
Method	Method	Method	Units	Units	Rate	to Room
TETD-TA1	TETD-TA1	OADB	ACTUAL	ACTUAL	MED-RCR	NO

CARD 1	1 Energy 8	imulation Par	ameters		
1st Month	Last Month	Level			Building
Energy	Energy	Of	Holiday	Calendar	Floor
Simulation	Simulation	Calculation	Code	Code	Area
JAN	DEC	ROOM	1978	1978	21253

----- Load Section Alternative #1 -----

---- Load Alternative ----

Number Description

1 BLDG 4109 BASERUM FT LEONARD WOOD

		eral Room Parameters -									
C)	Zone	eral Room Palameters					Acoustic	Floor to	Duplicate	Duplicate	
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
1	1	STORE-BARBER	100	21.87	2	0		9	•		
2	2	ADMIN. OFFICES	100	34.2	2	0		9			
3	3	COCKTAIL LOUNGE	100	12	2	0		9			
4	4	BAR - GAME ROOM	100	24.44	2	0		9			
5	4	BALL ROOM	100	70.15	2	0		9			
6	4	DINING ROOM	100	18.4	2	0		9			
7	4	KITCHER	100	31.47	2	0		9			

	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Ers	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
4	75			CLG75SUM	70		HTG70WNT	ROOM	MED70	NO
L										
2										YES
3										YES
l										YES
i										
5										

-----CARD 22-- Roof Parameters -----

		Roof							
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
Number	Number	Floor?	Length	Width	U-Value	Туре	Direction	Tilt	Alpha
M	1				.094	47			
1	1	YES							
2	1	YES				•			
3	1	YES							
4	1	YES							
5	1	YES							
6	1	YES							
7	1	YES							

					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier
M	1			.184	74				
1	1	55	13.5			0			
1	2	47	13.5			270			
2	1	100	13.5			0			
3	1	34	13.5			0			
3	2	34	13.5			90			
4	1	47	13.5			180			
4	2	72	13.5			270			
6	1	40	13.5			90			
7	1	89	13.5			180			
7	2	45	13.5			90			

CA	RD 25	Wall/Glas	s Paramet	ters							
				Pct Glass			External	Internal			Inside
Room	Wall	Glass	Glass	or No. of	Glass	Shading	Shading	Shading	Solar to		Visible
Number	Number	Length	Width	Windows	U-Value	Coefficient	Туре	Type	Ret. Air	Transmittance	Reflectance
М	1			1	.621	.58		3		. 8	
1	2	10	2.9					1			
2	1	10	9.4								
3	1	9	6								
3	2	18	8								
4	1	6	6								
4	2	12	6								
6	1	21.333	9				4				

Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Min1mum	Fans	Fan	Fan	Exhaust	Controls
l	P4109	L4109RM1	AVAIL	AVAIL		AVAIL				
2	P4109	L4109RM2	AVAIL	AVAIL		AVAIL				
3	P41093&4	L4109RM3	AVAIL	AVAIL		AVAIL		•		
4	P41093£4	L4109RM4	AVAIL	AVAIL		AVAIL				
5	P4109RM5	L4109RM5	AVAIL	AVAIL		AVAIL				
6	P4109RM6	L4109RM6	AVAIL	AVAIL		AVAIL				
7	P4109RM7	L4109RM7	AVAIL	AVAIL		AVAIL				

CA	RD 27	People an	d Lights -								
							Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Туре	Factor	Ret. Air	Point 1	Point 2
M		PEOPLE				WATTS	RECFL-NV				
1	10		252	174	2836		INCAND				
2	8		250	200	3798		INCAND				
3	12		232	124	1860		INCAND				

CA	RD 27	People an	nd Lights -								
		•	_				Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret Air	Point 1	Point 2
4	22	•	239	141	2064		INCAND				
5	50		265	325	9156		INCAND				
-			225	325	1890		INCAND				
6	40			475	5472						
7	10		275	4/5	3472						

	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
ROOM	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load		Radiant	Optional
umber	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Pat
	1	OFFICE EQUIPMENT	5330	WATTS	E4109RM2	ELEC		41			
	1	APPLIANCES	321	WATTS	E4109RM3	ELEC		35			
	1	ENTERTAIN. EQUIP	1330	WATTS	E4109RM4	ELEC		42			
	1	KITCHEN EQUIP.	46868	WATTS	E4109RM7	ELEC		19			

C)	RD 29	Room Airflows								
		Ventila	tion			Infil	tration			
Room	Coo	ling	Bea	ting	Coo	ling	Hea	ting	Reheat	Minimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
1	15	PCT-MCLG	15	PCT-METG	186	CFM	186	CFM		
2	15	PCT-MCLG	15	PCT-MHTG	197	CFM	197	CFM		
3	15	PCT-MCLG	15	PCT-MHTG	140	CFM	140	CFM		
4	15	PCT-MCLG	15	PCT-MHTG	205	CFM	206	CFM		
5	15	PCT-MCLG	15	PCT-MHTG						
6	15	PCT-MCLG	15	PCT-MHTG	111	CFM	111	CFM		
7	15	PCT-MCLG	15	PCT-MHTG	250	CFM	250	CFM		

		Ma	in			Auxi	liary			
Room	Coo	ling	Неа	ting	Coo	ling	Eea	ting	Room E	xhaust
umber	Value	Units	Value	Units	Value	Un1ts	Value	Units	Value	Units
	1785	CFM								
?	3495	CFM								
ì	2760	CFM								
1	4540	CFM								
5	10860	CFM								
5	3810	CFM								
,	1570	CFM								

ROOM	Partition	Partition	Partition	Partition	Const	Temp	Cooling	Heating	Adjacent
tumber	Number	Length	Height	U-Value	Туре	Flag	Temp	Temp	Room No
1	1	168	9		101	CONSTANT			
2	1	458	9		101	CONSTANT			
3	1	182	9		101	CONSTANT			
4	1	357	9		101	CONSTANT			
5	1	500	9		101	CONSTANT			
6	1	261	9		101	CONSTANT			
7	1	405	9		101	CONSTANT			

СА	RD 32 E	xposed Floo	r Parameters-							
	Exposed	Slab-				E	xposed I	7100r		
Room	Floor	Perimeter	Loss	Floor	Floor	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Coefficient	Area	U-Value	Type	Flag	Temp	Temp	Room No
1	1	102	.67							
2	1	100	.67							
3	1	68	.67							
4	1	119	.67							
6	1	40	.67							
7	1	135	.67							

CARD 33 External Shading										
OVERHANG										
		Height				Left		Right	Adjacent	
Shading	Glass	Above	Projection	Glass	Projection	Projection	Projection	Projection	Building	
Туре	Height	Glass	Out	Width	Left	Out	Right	Out	Flag	
4	9	0	4							

CAR	D 34 In	ternal Shadi	.ng							
		Overall						Lockout	в	
Shading	Overall	Shading	Schedule	Shade	Visible	Min	Max	Solar	Max	Glare
Туре	U-Value	Coefficent	Code	Location	Transmittance	OADB	Solar	Ctrl Prob	Glare	Ctrl Prob
3	.452	.585	FL-INSHD	INSIDE						
		System	Section A	Alternative	9 #1					

-----CARD 39-- System Alternative -----

Number Description

BLDG 4109 BASERUN FT LEONARD WOOD

-----CARD 40--- System Type ----------OPTIONAL VENTILATION SYSTEM-----

System

Ventil

 Set
 System
 Deck
 Cooling
 Heating
 Cooling
 Heating
 Static

 Number
 Type
 Location
 SADBVh
 Schedule
 Schedule
 Schedule
 Pressure
 1 5Z

CARI	41 Zone	Assignm	ment									
System	Ref	81	Ref	#2	Ref	#3	Ref	#4	Ref	# 5	Ref	# 6
Set Number	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3										
4	4	4										

CX	RD 42-	Fan	SP and	Duct Par	ameter	rg					
System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	. 2						OMIT			OTHER	DUCTED
2	. 2						OMIT		*	OTHER	DUCTED
3	.3						OMIT			OTHER	DUCTED
4	.5						OMIT			OTHER	DUCTED

CA	CARD 43 Airflow Design Temperatures									
System	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Design
Set	Cooling	Cooling	Beating	Heating	Cooling	Cooling	Preheat	Preheat	Room	Ht Rec
Number	SADB	SADE	SADB	SADB	Lv DB	Lv DB	Lv DB	Lv DB	RH	Diff
1	52.1	52.1								
2										
3	62.4	62.4								
4	62.8	62.8								

CA	CARD 45 Equipment Schedules										
System	Main		Direct	Indirect	Auxiliary	Main	Main			Auxiliary	
Set	Cooling		Evap	Evap	Cooling	Heating	Preheat	Reheat	Mech.	Heating	
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coil	Humidity	Coil	
1	FLCCOIL	OFF	OFF	OFF	OFF	FLHCOIL	OFF	OFF	OFF	OFF	

```
-----CARD 45--- Equipment Schedules -----
             Direct Indirect Auxiliary Main Main
System Main
                Evap Evap Cooling Heating Preheat Reheat Mech.
Set Cooling
                            Coil Coil Coil
                                                    Humidity Coil
Number Coil Economizer Coil Coil
                                 FLHCOIL OFF
                                              OFF
                                                    OFF
                                                          OFF
                           OFF
   FLCCOIL OFF
               OFF
                      OFF
                                 FLHCOIL OFF
                                                          OFF
                                              OFF
                                                    OFF
                           OFF
                      OFF
                OFF
    FLCCOIL OFF
                                              OFF
                                                    OFF
                                                          OFF
                                  FLHCOIL OFF
                     OFF
                           OFF
   FLCCOIL OFF
                OFF
```

```
-----CARD 48-- Cooling Capacity Overrides -----
                         -----MAIN COOLING---- ---AUX COOLING----
                  Misc
System
                         Capacity Capacity Capacity Capacity Capacity
                  Loads
Set People Lights
                                      Sizing Location Value Units
Number Variance Variance Value Units
                               MBH
                         55.5
                         108.75 MBH
                         113.1
                               MEH
3
                         960
                                MBR
```

```
-----CARD 49-- Heating Capacity Overrides -----
System ---MAIN HEATING--- ----PREHEAT----- ----REHEAT----- ---HUMIDIFICATION-- ---AUX HEATING----
Set Capacity Capacity Capacity Capacity Capacity Capacity Capacity Capacity Capacity
Number Value Units Value Units Value Units Value Units Value
1
     405.8
            MBH
2
     107
            MBH
     547.5
            MBH
```

----- Equipment Section Alternative #1 ------

```
----CARD 59-- Equipment Description / TOD Schedules -----
          Elec Consump Elec Demand Demand
Alternative Time of Day Time of Day Limit
          Schedule Schedule Max KW Alternative Description
Number
                                        BLDG 4109 BASERUN FT LEONARD WOOD
1
```

```
-----CARD 60--- Cooling Load Assignment-----
Load All Coil Cooling
Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 5- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Ref Cool Ref Sizing Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End
1
                  1 4
   1
                  1
```

	Equip	Num			OOLING			H	EAT RECO			Seq		Demand	
	Code	of		city		Energy		-Capacity		Energ	y	Order	Seq	Limit	
•	Name	Units	Value		Valu	e Uni	ts V	alue Uni	ts	Value	Units	Num	Type	Number	•
1	BQ1121L	1	52	TONS								1	PAR		
2	BQ1121L	1	52	TONS								2	PAR		
Cool Ref	CHILL	ED WATE	Load 1	con	DENSER		HT REC or	: AUX Full Load	Switch- over	Cold 1 Storage	Cooling Tower 1				
Load			ng Load	Assign	ment				-					-	
Ass:	ignment l erence l	All Coil Loads To Reating	-G Ref Be 1	roup 1- gin End	-Group Begin E	2Gro	up 3G n End Be	roup 4-	-Group 5 Begin En	Group d Begin	6Grou End Begin	p 7 End B	Group egin E	8Gr and Beg	oup 9- in End
Assi Refe	ignment 1 erence i	Coads To Heating	Røf Be	gin End 4	Begin E	nd Begi	n End Be	gin End	Begin En	d Begin	End Begin	End E	egin E	nd Beg	in End
Assi Refe	ignment 1 erence :	Loads To Heating I	Røf Be	gin End 4 pment P	Begin E	nd Begi	n End Be	gin End	Begin En	d Begin	6Grou End Begin Switch	End E	egin E	nd Beg	in End
Assi Refe	ignment I erence I 	Loads To Heating I Heati	Ref Be 1 ng Equi	gin End 4 pment P	Begin E	nd Begi	n End Be	gin End	Begin En	d Begin	End Begin	End E	egin E	nd Beg	in End Deman
Refe	ignment I	Loads To Heating L Heati p Nu	Ref Be 1 ng Equi mber E	gin Bnd 4 pment P	Begin E	and Begi	n End Be	gin End :	Begin En	d Begin Seq Order	End Begin	End E	Misc.	nd Beg	in End Deman
Refe	gnment I erence ICARD 67- t Equi	Coads To Heating i Heati p Nu Of	Ref Be 1 ng Equi mber E : F	gin End 4 pment P W Pmp ull Ld	Begin E	nd Begi	Units	gin End : Energy Rate	Begin En	d Begin Seq Order	End Begin Switch over	End E	egin E	nd Beg	in End Deman
Refe 1	erence is code to the real to	Loads To Heating 1 Heati p Nu Of Ur	Ref Be	gin End 4 pment P W Pmp ull Ld 'alue 56	Begin E arameters Units KW	cap'y Value	Units	gin End : Energy Rate Value	Begin En	d Begin Seq Order Number	End Begin Switch over	End E	Misc.	nd Beg	in End Deman
Refe 1	CARD 67 t Equi Code ber Name EQ20	Loads To Heating 1 Heati p Nu Of Ur	Ref Be	pment P. W Pmp ull Ld 'alue 56	Begin E arameters Units KW	Cap'y Value 1228.6	Units	Energy Rate Value 80	Begin En	d Begin Seq Order Number	End Begin Switch over	End E	Misc.	nd Beg	in End Deman
Reference 1 Hear Ref Num 1	CARD 67 t Equi Code ber Name EQ20	Loads To Heating i Beati p Nu Of Ur O1 1	Ref Be	pment P. W Pmp ull Ld 'alue 56	Begin E arameters Units KW	Cap'y Value 1228.6	Units	Energy Rate Value 80	Unite PCTEFF	d Begin Seq Order Number	End Begin Switch over	End E	Misc.	nd Beg	in End Deman
Reference 1 Hear Ref Num 1	CARD 67 t Equi Code ber Name EQ20	Loads To deating i	Ref Be 1 ng Equi mber H its V Squipmer	pment P. W Pmp ull Ld 'alue 56	Begin E arameters Units KW	Cap'y Value 1228.8	Units MBH	Energy Rate Value 80	Unite PCTEFF	d Begin Seq Order Number	End Begin Switch over	End E	Misc.	nd Beg	in End Deman
Reference 1 Hear Ref Num 1 Sys Set Num	CARD 67 t Equi Code ber Name EQ20	Loads To deating i	Ref Be 1 ng Equi mber H its V Squipmer	pment P. W Pmp ull Ld 'alue 56	Begin E arameters Units KW	Cap'y Value 1228.8	Units MBH	Energy Rate Value 80	Unite PCTEFF	d Begin Seq Order Number	End Begin Switch over	End E	Misc.	nd Beg	in End Deman
Reference of the second	CARD 67 t Equi Code ber Name EQ20	Loads To deating i	Ref Be 1 ng Equi mber H its V Squipmer	pment P. W Pmp ull Ld 'alue 56	Begin E arameters Units KW	Cap'y Value 1228.8	Units MBH	Energy Rate Value 80	Unite PCTEFF	d Begin Seq Order Number	End Begin Switch over	End E	Misc.	nd Beg	in End Deman

-----CARD 70-- Fan Equipment RW Overrides -----Room Opt System Cool Heat Ret Exh Aux Room Opt Set Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Vent Number KW KW KW KW KW KW Fan Fan Fan Fan 1 .56 1.119

CA	PD 70-	- Fan	Equip	ent KW	Over	rides -						
		MATH S	YSTEM		OTi	HER SYS	TEM	D	EMAN D	LIMIT	PRIORI	TY
System						ROOM					Room	Opt
System					G.,,	Exh	Vent	Cool	Heat	Aux	Exh	Vent
Set	Fan	Fan	Fan	Fan	øup						Fan	Fan
Number	KW	KW	KW	KW	KW	KW	KW	Fan	ran	Fan	Fan	
3	.746											
4	7.46											

			/ G==14ng	Tower Pari	meters		-				
C	Cooling	Condenser	/ Cooring	Energy	Energy			Number	Percent	Low Spd	Low Spd
	-	Capacity	Capacity	Consump	Consump	Fluid	Tower	Of	Airflow	Energy	Energy
Tower	Tower	Value	Unite	Value	Units	Туре	Type	Cells	Low Spd	Value	Units
Ref	E05200	52	TONS	3.357	KW	REFRIG	CNDFAN	3			
1	_	52	TONS	3.357	KW	REFRIG	CNDFAN	3			
2	EQ 5200	32	10								

	75	- Miscella	DOOUG ACC	BESOTV -								
	CARD /5	- WIRCGITS	meous acc	Language					#3			
	#1				#2						Energy	Sched
Misc	Equip	Energy	Energy	Sched	Equip	Energy	Energy	Sched	Equip	Energy	2	
	• -		11-1-0	Code	Code	Value	Units	Code	Code	Value	Units	Code
Ref	Code	Value	Units	Code				AVAIL				
1	EQ5013	.373	KW	AVAIL	EQ5013	.373	KW	WANTE				

Utility Description Reference Table

```
Schedules:
    AVAIL AVAILABLE (100%)
    CLG758UM COOLING TSTAT AT 75 (MAY THRU SEPT)
    E4109RM2 EQUIP SCHEDULE - BLDG 4109 ROOM 2
    E4109RM3 EQUIP SCHEDULE - BLDG 4109 ROOM 3
    E4109RM4 EQUIP SCHEDULE - BLDG 4109 ROOM 4
    E4109RM7 EQUIP SCHEDULE - BLDG 4109 ROOM 7
    FL-INSHD INTERNAL SHADING: VENITIAN BLINDS
    FLCCOIL COOLING COIL SCHEDULE - MAY THRU SEPT
    FLECOIL HEATING COIL SCHEDULE - OCT THRU APR
    HTG70WNT HEATING T-STAT AT 70 (OCT TO APR)
    L4109RM1 LIGHT SCHEDULE - BLDG 4109 ROOM 1
    L4109RM2 LIGHT SCHEDULE - BLDG 4109 ROOM 2
    L4109RM3 LIGHT SCHEDULE - BLDG 4109 ROOM 3
    L4109RM4 LIGHT SCHEDULE - BLDG 4109 ROOM 4
    L4109RM5 LIGHT SCHEDULE - BLDG 4109 ROOM 5
    L4109RM6 LIGHT SCHEDULE - BLDG 4109 ROOM 6
    L4109RM7 LIGHT SCHEDULE - BLDG 4109 ROOM 7
     OFF ALWAYS OFF
     P4109 PEOPLE SCHEDULE - BLDG 4109
     P4109364 PEOPLE SCHEDULE - BLDG 4109 RMS 3 & 4
     P4109RM5 PEOPLE SCHEDULE - BLDG 4109
     P4109RM6 PEOPLE SCHEDULE - BLDG 4109 ROOM 6
     P4109RM7 PEOPLE SCHEDULE - BLDG 4109 ROOM 7
System:
     MZ MULTIZONE
     SZ SINGLE ZONE
Equipment:
     Cooling:
          EO1121L AIR-CLD RECIP 35-60 TONS
     Heating:
          EQ2001 GAS FIRE TUBE HOT WATER
          EQ4002 BI CENTRIF. FAN C.V.
          EQ4003 FC CENTRIF. FAN C.V.
          Tower:
              EQ5200 CONDENSER FANS
           EQ5013 WATER CIRC. PUMP C.V.
```

Schedule Name: AVAIL
Project: AVAILABLE (100)

Location:

Client:

Program User:

Comments:

Starting Month: JAN Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

Schedule Name: CLG75SUM

Project: COOLING TSTAT AT 75 (MAY THRU S

Location:

Client:

Program User:

Comments: COOLING TSTAT AT 75 (MAY THRU

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

•

0 75

24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

```
Schedule Name: E4109RM2
```

Project: EQUIP SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIP SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

0

100 7

80 16 22 0

24

Starting Month: JAN Ending Month: DEC

Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0 0

Schedule Name: E4109RM3

Project: EQUIP SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIP SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0

Schedule Name: E4109RM4

Project: EQUIP SCHEDULE - BLDG 4109 ROOM

Location: FT LEORARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIP SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Per	cent
0	10	
12	90	
14	40	
17	90	
22	10	
24		

Schedule Name: E4109RM7

Project: EQUIP SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIP SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
6	50
9	80
12	50
14	80
17	50
18	20
20	10
24	

Schedule Name: FL-INSHD Project: INTERNAL SHADING: VENITIAN BLIN Location: FT LEONARD WOOD Client: US ARMY Program User: EMC ENGINEERS, INC. Comments: INTERNAL SHADING SCHEDULE Starting Month: JAN Ending Month: APR Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent ----0 75 24 Starting Month: MAY Ending Month: SEP Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent 0 35 24 Starting Month: OCT Ending Month: DEC Starting Day Type: WKDY Ending Day Type: WKDY Hour Util Percent ----0 75 24 Starting Month: JAN Ending Month: DEC

Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent ----0 25 24

```
Schedule Name: FLCCOIL
Project: COOLING COIL SCHEDULE - MAY THR
Location: FT LEONARD WOOD, MO
Client: US ARMY
Program User: EMC ENGINEERS, INC.
Comments: COOLING COIL SCHEDULE - MAY TH
Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
 0
      0
 24
Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
----
 0 100
  24
Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN
Hour Util Percent
```

Schedule Name: FLECOIL

Project: HEATING COIL SCHEDULE - OCT THR

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: HEATING COIL SCHEDULE - OCT TH

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent ----

0 0

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

```
Schedule Name: HTG70WNT
Project: HEATING T-STAT AT 70 (OCT TO AP
Location:
Client:
Program User:
Comments: HEATING T-STAT AT 70 (OCT TO A
Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN
Hour Temperature
 0 70
 24
Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN
Hour Temperature
  0 35
  24
Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN
Hour Temperature
```

Schedule Name: L4109RM1

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHT SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

24

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent
--- 0 0
24

Schedule Name: L4109RM2

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHT SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Perce
0	10
7	100
12	80
13	100
18	80
22	10
24	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour	Util Percent
0	0

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHT SCHEDULE - ROOM 3

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util	Percent
0		10
12	:	100

22 24

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHT SCHEDULE - ROOM 4

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
12	100
14	30
17	100
22	10

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHT SCHEDULE - ROOM 5

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
17	100
22	10

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHT SCHEDULE - ROOM 6

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	10
6	100
9	10
11	100
14	10
17	100
20	10

Project: LIGHT SCHEDULE - BLDG 4109 ROOM

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: LIGHT SCHEDULE - ROOM 7

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		0						1	0					
		6					1	0	0					

¹⁹

Schedule Name: OFF Project: ALWAYS OFF Location:

Client:

Program User: Comments:

Starting Month: JAN Ending Month: HTG Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent 0 0

Schedule Name: P4109

Project: PEOPLE SCHEDULE - BLDG 4109

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: PEOPLE SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	0
7	100
11	80
12	40
13	80
14	100
17	50
22	0
24	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Bour Util Percent
--- 0 0
24

Schedule Name: P41093&4

Project: PEOPLE SCHEDULE - BLDG 2100

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: PEOPLE SCHEDULE - RMS 3 AND 4

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	0
12	60
13	100
14	20
17	80
18	100
20	80
21	40
22	0

Project: PEOPLE SCHEDULE - BLDG 4109

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: PEOPLE SCHEDULE - ROOM 5

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percen
0	0
17	20
18	40
19	100
20	80
21	20
22	0
24	

Project: PEOPLE SCHEDULE - BLDG 4109 ROO

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: PROPLE SCHEDULE - ROOM 6

Starting Month: JAN Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util Percent
0	O
6	80
7	100
9	0
11	80
12	100
13	80
14	0
17	80
18	100
19	80
20	0
24	

Project: PROPLE SCHEDULE - BLDG 4109 ROO

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC. Comments: PEOPLE SCHEDULE - ROOM 7

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

_	
Hour	Util Percer
0	0
6	80
7	100
13	50
14	100
19	80
20	0

REAP STUDY, EXPANSION OF EMCS
FT. LEONARD WOOD, MO
US ARMY
E M C ENGINEERS, INC.

SPRINGFM Weather File Code: SPRINGFIELD, MISSOURI Location: 37.0 (deg) Latitude: 93.0 (deg) Longitude: 6 Time Zone: 1,265 (ft) Rlevation: 20.5 (in. Hg) Barometric Pressure: 0.97 Summer Clearness Number: 0.97 Winter Clearness Number: 94 (F) Summer Design Dry Bulb: Summer Design Wet Bulb: 78 (F) Winter Design Dry Bulb: 3 (F) Summer Ground Relectance: 0.20 0.20 Winter Ground Relectance: 0.0724 (Lbm/cuft) Air Density: Air Specific Heat: 0.2444 (Btu/lbm/F) Density-Specific Heat Prod: 1.0621 (Btu-min./hr/cuft/F) 4,675.1 (Btu-min./hr/cuft) Latent Heat Factor: 4.3449 (Lb-min./hr/cuft) Enthalpy Factor:

Design Simulation Period: May To September System Simulation Period: January To December Cooling Load Methodology: TETD/Time Averaging

Time/Date Program was Run: 9: 9:59 3/26/93
Dataset Name: 4109 .TM

AIRFLOW - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

SYSTEM SUMMARY -----(Design Airflow Quantities)

Auxil. Room ----- Main -----Exhaust Supply Exhaust Outside Cooling Heating Return Airflow Airflow Airflow Airflow Airflow Airflow Airflow System System (Cfm) (Cfm) (Cfm) (Cfm) (Cfm) (Cfm) Number Type 0 1,971 3,692 0 454 1,785 268 1,785 1 8Z 0 721 0 524 3,495 3,495 2 8Z 0 2,900 554 2,760 2,760 414 3 SZ 0 0 20,780 21,347 3,684 20,780 3,117 4 MZ 0 28,820 28,820 29,910 5,413 0 4,323

CAPACITY - ALTERNATIVE 1

Totals

BLDG 4109 BASERUN FT LEONARD WOOD

SYSTEM SUMMARY (Design Capacity Quantities)

----- Cooling ------ Heating ------Main Sys. Aux. Sys. Opt. Vent Cooling Main Sys. Aux. Sys. Preheat Reheat Humidif. Opt. Vent System System Capacity Capacity Capacity Totals Capacity Capacity Capacity Capacity Capacity Totals (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) Number Type (Tons) (Tons) (Tons) (Btuh) -68,574 0 0 0 0 4.6 -68,574 0 0.0 0.0 4.5 0 -405,800 0 0 9.1 -405,800 0 0.0 0.0 2 SZ 9.1 0 -107,000 0 0 0 9.4 -107,000 0 -6,740 0.0 0.0 9.4 3 SZ 0 -604,858 0 0 -57,358 80.0 -547,500 0.0 0.0 4 MZ 80.0 0 0 -1,185,232 0 0 -64,098 0.0 103.1 -1,128,874 0.0 103.1 Totals

The building peaked at hour 17 month 7 with a capacity of 53.5 tons

ENGINEERING CHECKS - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

ENGINEERING CHECKS-----

			Percent		Cool:	ing		Heat	ing	
System Number	Main/ Auxiliary	System Type	Outside Air	Cfm/ Bq Ft	Cfm/ Ton	Sq Ft /Ton	Btuh/ Sq Ft	Cfm/ Sq Ft	Btuh/ Sq Ft	Floor Area Sq Ft
			15.00	0.82	385.9	472.9	25.38	0.82	-31.36	2,187
-	Main	SZ SZ	15.00	1.02	385.7	377.4	31.90	1.02	-118.65	3,420
_	Main Main	SZ	15.00	2.30	292.8	127.3	94.25	2.30	-89.17	1,200
	Main	MZ	15.00	1.44	259.7	180.6	66.45	1.44	-41.87	14,446

-68.6

Total

SZ - SINGLE ZONE Peak 1

Mo/Hr: 13/ 1 Mo/Hr: 7/16 Mo/Hr: 7/16 Peaked at Time ==> OADB: 3 OADB: 93 OADB/WB/HR: 93/ 77/124.1 Outside Air ==> Space Peak Coil Peak Percnt * Net Percnt * Space Ret. Air Ret. Air Space Of Tot Tot Sens Space Sens Total Of Tot * Of Tot * Sensible Latent Sensible Sens.+Lat. (Btuh) (%) (%) * (Btuh) (%) * (Btuh) (Btuh) (Btuh) (Btuh) Envelope Loads (Btuh) 0 0 0.00 0.00 * 0.00 * 0 0 0 0 Skylite Solr 0 0.00 0.00 * 0 n 0 0.00 * 0 0 Skylite Cond 20.09 -13.774 -13,774 42.52 * 18,461 26.69 * 18.461 18,461 0 Roof Cond 0 2.68 * 0 1.166 1.69 * 1,166 1,166 0 Glass Solar -1,597 2.33 0.95 * -1,597 412 412 0.60 * Glass Cond 412 0 24.10 -16,527 -16,527 17.22 * 7,474 10.81 * 7,474 7,474 ٥ Wall Cond 0 0.00 0.00 * 0 0.00 * 0 0 0 Partition -4.579 6.68 0.00 * -4,579 0.00 * 0 0 0 Exposed Floor 19.30 8.34 * -13,236 -13,236 3,620 11.247 16.26 * 11.247 Infiltration -49,712 72.49 71.71 * -49,712 56.04 * 31,132 38,759 0 38,759 Sub Total==> Internal Loads 0 0.00 22.30 * 0 9.679 9,679 14.00 * 9,679 0 Lights 0.00 0 0 5.57 * 6.01 * 2,419 4,159 4,159 People 0.00 0 0 0.00 * 0.00 * 0 0 0 0 O Misc 0 0.00 0 27.87 * 20.01 * 12,098 0 13.838 0 13.838 Sub Total==> 0.00 * 0 0 0.00 0 0.00 * 0 0 Ceiling Load 27.78 0.00 0 -19.053 0 23.41 * 16,190 ٥ 0 0 Outside Air -0.28 190 0.00 0.28 * 190 Sup. Fan Heat 0 0.00 * 0 0.00 * Ret. Fan Heat 0 0.00 0.00 * 0.00 * 0 0 Duct Heat Pkup 0.00 0 0.42 * 183 0.26 * 183 OV/UNDR Sizing 183 0.00 0 0.00 * 0.00 * 0 0 Exhaust Heat 0.00 0.00 * 0.00 0 0 Terminal Bypass -68,574 100.00 -49,712 100.00 * 43,414 69,161 100.00 * 0 0 52,780 Grand Total ==> ------COOLING COIL SELECTION-----Gross Total Glass (sf) (%) Leaving DB/WB/HR Total Capacity Sens Cap. Coil Airfl Entering DB/WB/HR 2.187 Deg F Deg F Grains Floor Deg F Deg F Grains (cfm) (Mbh) (Mbh) 1,512 56.9 Part 52.0 51.0 71.9 39.2 1,785 77.7 64.0 Main Clg 4.6 55.5 102 ExFlr 0.0 0.0 0.0 0.0 0 0.0 0.0 0.0 0.0 Aux Clg 0.0 2,187 0 0 Roof 0.0 0.0 0.0 0.0 0 0.0 0.0 0.0 0.0 0.0 Opt Vent 3 Wall 1,377 36 55.5 4.6 Totals --TEMPERATURES (F)----- ENGINEERING CHECKS-------AIRFLOWS (cfm)-----------HEATING COIL SELECTION-----Clg Type Clg % OA 15.0 Cooling Heating Capacity Coil Airfl Ent Lvg Туре SADB 52.1 96.2 0.82 Clg Cfm/Sqft Vent 268 268 Deg F (cfm) Deg F (Mbh) 70.0 385.95 Plenum 75.0 186 Clg Cfm/Ton 186 Infil 96.1 1,785 60.0 -68.6 Main Htg 70.0 75.0 Return Cla Saft/Ton 472.86 1,785 1,785 Supply 0 0.0 0.0 0.0 Anx Htg Ret/OA 77.7 60.0 Clg Btuh/Sqft 25.38 0 0 Mincfm 52.0 60.0 -0.0 1.785 Preheat 70.0 75.0 Runarnd 10 1,785 No. People 0.0 Return 1.785 0.0 0 0.0 Reheat 0.0 0.0 Fn MtrTD 15.0 Htg % OA 268 268 0 0.0 0.0 Exhaust Humidif 0.0 0.0 0.82 Fn BldTD 0.0 Htg Cfm/SqFt ٥ 0.0 0.0 Rm Exh 0.0 Opt Vent Fn Frict 0.1 0.0 Htg Btuh/SqFt -31.36 0 n Auxi1

Peak

Total

-405.8

82

- SINGLE ZONE

Mo/Hr: 13/ 1 Mo/Hr: 7/15 Mo/Hr: 7/15 Peaked at Time ==> OADB: 3 OADB: 94 OADE/WB/HR: 94/ 78/124.0 Outside Air ==> Percnt * Space Peak Coil Peak Net Percnt * Space Ret. Air Ret. Air Space Of Tot Tot Sens Of Tot * Space Sens Total Of Tot * Sensible Sensible Latent Sens.+Lat. (Btuh) (Btuh) (%) (%) * (%) * (Btuh) (Btuh) (Btuh) (Btuh) (Btuh) 0.00 Envelope Loads 0 0 0.00 * 0.00 * 0 0 0 0 0.00 Skylite Solr 0 0 0.00 * 0.00 * n 0 0 D 22.30 Skylite Cond -21,539 44.14 * -21.539 29,673 29,673 27.93 * 0 29.673 0 0.00 Roof Cond 0 1,974 2.94 * 1,974 1.86 * 1,974 0 4.27 Glass Solar -4.121 -4,121 1.55 * 1,039 0.98 * 1,039 0 1,039 16.03 Glass Cond -15,484 13.10 * -15,484 8.29 * 8,805 8,805 8,805 0 0 0.00 Wall Cond 0.00 * 0 0 0.00 0 0 4.65 Partition -4.489 -4.489 0.00 * 0 0 0.00 Exposed Floor 0 -14,018 14.51 5.91 * -14,018 3,975 10.55 11,209 11,209 Infiltration 61.76 -59,652 -59,652 67.64 * 49.60 * 45,466 52,700 52.700 0 Sub Total ==> 0.00 Internal Loads 0 18.71 * 11.83 * 12,574 12,574 12,574 0 Lights 0 0.00 0 2.56 * 3.12 * 1,720 3,320 3,320 0.00 People 11.10 * 0 0 7.02 * 7,458 7,458 0 7,458 0 0.00 Misc 0 0 32.36 * 21.98 * 21,752 23,352 0 23,352 Sub Total ==> 0 O 0.00 0.00 * 0.00 * 0 0 0 0 Ceiling Load 38.62 0.00 * O -37,305 0 28.07 * 0 29,830 n Outside Air -0.39 373 0.00 * 0.35 * 373 Sup. Fan Heat 0 0.00 * 0.00 * 0 0 Ret. Fan Heat 0.00 0.00 * 0.00 * 0 Duct Heat Pkup 0.00 -0.00 * -0.00 * 0 OV/UNDR Sizing 0 0.00 0.00 * 0.00 * o 0 Exhaust Heat 0 0.00 0.00 * 0.00 * 0 0 Terminal Bypass -96,584 100.00 100.00 * -59,652 106,255 100.00 * 67,218 0 76.052 Grand Total ==> ------AREAS----------COOLING COIL SELECTION-----Glass (sf) (%) Gross Total Leaving DB/WB/HR Entering DB/WB/HR Total Capacity Sens Cap. Coil Airfl 3,420 Deg F Deg F Grains Floor Deg F Deg F Grains (cfm) (Mbh) (Tons) 4,122 54.9 Part 64.4 56.8 3.495 77.8 65.1 77.3 80.0 108.7 Main Clg ExFlr 100 0.0 0.0 0.0 0.0 0.0 0.0 0 0.0 0.0 0.0 Aux Clg 0 3,420 0.0 Roof 0.0 0.0 0.0 0.0 0.0 0.0 0 0.0 0.0 Opt Vent Wall 1,350 108.7 Totals 9.1 --TEMPERATURES (F)----- ENGINEERING CHECKS-------AIRFLOWS (cfm)------Type Clg Hta 15.0 Clg % OA Cooling Heating Capacity Coil Airfl Ent Lvg Type 86.1 56.9 1.02 SADE Clg Cfm/Sqft 524 524 (cfm) Deg F Deg F Vent (Mbh) 75.0 70.0 Plenum 385.66 Clg Cfm/Ton 197 197 Infil 3,495 -23.4 -405.8 86.0 Main Htg 70.0 75.0 Return 377.38 Clg Sqft/Ton 3,495 3,495 0.0 Supply 0 0.0 Any Ht.o 0.0 77.8 60.0 Ret/OA Clg Btuh/Sqft 31.80 0 0 56.8 Mincfm 60.0 3.495 -0.0 Preheat Runarnd 75.0 70.0 8 3,495 No. People Return 3,495 0.0 0.0 0 0.0 Reheat 0.0 15.0 Fn MtrTD 0.0 524 Htg % OA 524 0.0 Exhaust 0 0.0 Humidif 0.0 Fn BldTD 0.0 0.0 Htg Cfm/SqFt 1.02 0 0 Rm Exh 0.0 0.0 0.0 Opt Vent Fn Frict 0.1 Htg Btuh/SqFt -118.65 o Aux11

PAGE 6

SZ - SINGLE ZONE Peak System

eaked at Time == putside Air ==> Invelope Loads Skylite Solr Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights People		B/WB/HR: 9	/13 2/ 77/124.0 Ret. Air Latent (Btuh)	Net Total (Btuh) 0 0 9,092 11,484 1,685 4,968	Percnt Of Tot (%) 0.00 0.00 14.73 18.60 2.73 8.05 0.00	* * * * * * * * *	OADB: Space Sensible (Btuh) 0 9,092 11,484 1,685	Percnt Of Tot (%) 0.00 0.00 24.62 31.09	* * * * * *	Space Peak Space Sens (Btuh) 0 0 -7,558	COADE: 3 Coil Peak Tot Sens (Btuh) 0 -7,558	0f 0	Tot (%) 0.00
Envelope Loads Skylite Solr Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights	Space Sens.+Lat. (Btuh) 0 9,092 11,484 1,685 4,968 0 0 6,399 33,627	Ret. Air Sensible (Btuh) 0 0 0 0	Ret. Air Latent	Total (Btuh) 0 9,092 11,484 1,685 4,968	Of Tot (%) 0.00 0.00 14.73 18.60 2.73 8.05	* * * * * * *	Sensible (Btuh) 0 0 9,092	Of Tot (%) 0.00 0.00 24.62 31.09	* * * * * *	Space Sens (Btuh) 0 0 -7,558	Tot Sens (Btuh) 0 0 -7,558	0f 0	Tot (%) 0.00
Skylite Solr Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights	Sens.+Lat. (Btuh) 0 0 9,092 11,484 1,685 4,968 0 0 6,399 33,627	Sensible (Btuh) 0 0 0 0 0 0 0 0 0	Latent	Total (Btuh) 0 9,092 11,484 1,685 4,968	Of Tot (%) 0.00 0.00 14.73 18.60 2.73 8.05	* * * * * * *	Sensible (Btuh) 0 0 9,092	Of Tot (%) 0.00 0.00 24.62 31.09	* * * * * *	Space Sens (Btuh) 0 0 -7,558	Tot Sens (Btuh) 0 0 -7,558	0f 0	Tot (%) 0.00
Skylite Solr Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights	Sens.+Lat. (Btuh) 0 0 9,092 11,484 1,685 4,968 0 0 6,399 33,627	Sensible (Btuh) 0 0 0 0 0 0 0 0 0	Latent	(Btuh) 0 0 9,092 11,484 1,685 4,968	(%) 0.00 0.00 14.73 18.60 2.73 8.05	* * * * * *	(Btuh) 0 0 9,092 11,484	(%) 0.00 0.00 24.62 31.09	* * * *	(Btuh) 0 0 -7,558	(Btuh) 0 0 -7,558	11	(%) 0.00 0.00
Skylite Solr Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights	(Btuh) 0 0 9,092 11,484 1,685 4,968 0 0 6,399 33,627	(Btuh) 0 0 0 0 0	(Btuh)	0 9,092 11,484 1,685 4,968	0.00 0.00 14.73 18.60 2.73 8.05	* * * * * *	0 0 9,092 11,484	0.00 0.00 24.62 31.09	* * * *	0 0 -7,558	0 0 -7,558	11	0.00
Skylite Solr Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights	0 0 9,092 11,484 1,685 4,968 0 0 6,399 33,627	0 0 0 0		0 9,092 11,484 1,685 4,968	0.00 14.73 18.60 2.73 8.05	* * * *	0 9,092 11,484	0.00 24.62 31.09	* *	0 -7,558	0 -7,558	11	0.00
Skylite Cond Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> Internal Loads Lights	0 9,092 11,484 1,685 4,968 0 0 6,399 33,627	0 0 0 0		9,092 11,484 1,685 4,968	14.73 18.60 2.73 8.05	* *	9,092 11,484	24.62 31.09	*	-7,558	-7,558	11	
Roof Cond Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> nternal Loads Lights	9,092 11,484 1,685 4,968 0 6,399 33,627	0 0 0		11,484 1,685 4,968	18.60 2.73 8.05	*	11,484	31.09	*	-	•		1.26
Glass Solar Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> nternal Loads Lights	11,484 1,685 4,968 0 0 6,399 33,627	0 0 0		11,484 1,685 4,968	2.73 8.05	*				0	0	(
Glass Cond Wall Cond Partition Exposed Floor Infiltration Sub Total==> nternal Loads Lights	1,685 4,968 0 0 6,399 33,627	0		4,968 0	8.05		1,685						0.00
Wall Cond Partition Exposed Floor Infiltration Sub Total==> nternal Loads Lights	4,968 0 0 6,399 33,627	o		0		*		4.56	*	-8,681	-8,681		2.93
Partition Exposed Floor Infiltration Sub Total==> nternal Loads Lights	0 0 6,399 33,627			0	0.00		4,968	13.45	*	-8,876	-8,876		3.22
Exposed Floor Infiltration Sub Total==> nternal Loads Lights	0 6,399 33,627	0		n		*	c	0.00	*	0	c		0.00
Infiltration Sub Total==> nternal Loads Lights	6,399 33,627	0			0.00	*	C	0.00	*	-3,053	-3,053	•	4.55
Sub Total==> nternal Loads Lights	33,627	0		6,399	10.37	*	2,457	6.65	*	-9,962	-9,962	1	4.84
nternal Loads Lights				33,627	54.48	*	29,685	80.37	*	-38,129	-38,129	5	6.78
Lights	4,888			•		*			*				
-	4,000	0		4,888	7.92	*	4,88	13.23	*	0	•)	0.00
People	2 106	ŭ		3,186	5.16		1,69	4.60	*	0	•)	0.0
-	3,186	0	0	192			19:	2 0.52	*	0	•)	0.0
Misc	192	0		8,266			6,77	8 18.35	*	0)	0.0
Sub Total==>	8,266	0	-	0,200				0.00	*	0)	0.0
eiling Load	0	0	•	18,922				0 0.00	*	0	-29,46	4	3.8
utside Air	0	U		442				0.00	*		44	2 -	0.6
up. Fan Heat		0		0				0.00	*			כ	0.0
et. Fan Heat		0		0				0.00				0	0.0
uct Beat Pkup				471			47	1 1.28	*	0	•	0	0.0
v/UNDR Sizing	471	_) 0	47.1				0.00	*			0	0.0
Exhaust Heat		0						0.00	*			0	0.0
Cerminal Bypass		C	, ,		, 0.00	*			*				
Grand Total==>	42,364	d	0	61,728	100.00	, *	36,93	5 100.00	*	-38,129	-67,14	7 10	00.0
		coc	OLING COIL SE	ELECTION					•				
Tota	1 Capacity		Coil Airfl		ing DB/WI		Leavir	ng DB/WB/HR		Gross Total		(sf)	(%)
(Tons		(Mbh)	(cfm)	Deg F De	eg F Gra	ains	Deg F De	g F Grain	3	Floor	L,200		
ain Clg 9.		81.8	2,760	77.5	57.1	88.2	62.2	3.9 51.	5	Part 1	1,638		
ıx Clg 0.		0.0	0	0.0	0.0	0.0	0.0	0.0 0.	0	ExFlr	68		
pt Vent 0.			0	0.0	0.0	0.0	0.0	0.0 0.	0	Roof	1,200	0	
otals 9.										Wall	918	198	:
HEAT		7 BOULON		А	TRFLOWS	(cfm)		ENGINEE	RING	CHECKS	TEMPERAT	JRES (F)-
				Type	Coolin		Heating	Clg % OA		15.0	Туре	:lg	Ħt
	city Coil			Vent	41	-	414	Clg Cfm/S	qft	2.30	SADB	52.4	83
		fm) Deg		Infil	14		140	Clg Cfm/T		292.84	Plenum	75.0	70
-		0 0.		Supply	2,76		2,760	Clg Sqft/		127.32	Return	75.0	70
ux Btg	6.0			Mincfm		0	0	Clg Btuh/		94.25	Ret/OA	77.5	60
		.,760 60. . 0 0		Return	2,76		2,760	No. Peopl		12	Runarnd	75.0	70
eheat 	0.0	0 0.		Exhaust	41		414	Htg % OA		15.0	Fn MtrTD	0.1	(
umidif	0.0			Rm Exh		0	0	Htg Cfm/S	qFt	2.30	Fn BldTD	0.0	(
Opt Vent Cotal -1	0.0 07.0	0 0.	0.0	Auxil		0	0	Htg Btuh			Fn Frict	0.1	C

4 Block MZ - MULTIZONE

				PEAK *****	******	*****	****	*** CLG S	PACE PE	AK *****	**** HEATI	NG COIL PEA	K ***	****
****	****	**** COO					*	Mo/H				Mo/Hr: 13/	1	
Peaked at				7/17 92/ 76/116.5			*	OAD		*		OADB: 3		
Outsids Ai	r ==>	OADI	WB/HR:	92/ /6/114.8			*			*				
		_	m_+ =4_	Dat 11:	Net	Percnt	*	Spa	ce	Percnt *	Space Peak	Coil Pes	k F	ercnt
		Space		Ret. Air Latent	Total		*	Sensib		of Tot *	Space Sens	Tot Ser	s C	of Tot
		.+Lat.	Sensible		(Btuh)		*	(Btu		(♦) *	(Btuh)	(Btul	1)	(%)
Envelope L		(Btuh)	(Btuh)	(Btuh)	(2041.)		*	•	0	0.00 *	C)	0	0.00
Skylite		0	0				*		0	0.00 *	C)	0	0.00
Skylite		0	0		110,942			103,9	172	38.62 *	-90,981	-90,98	31	8.29
Roof Con	id 1	110,942	0		11,610			15,9		5.92 *	()	0	0.00
Glass So	olar	11,610	0		3,477			2,6		1.07 *	-13,940	-13,9	16	1.27
Glass Co	ond	3,477	0		-			29,2		10.87 *	-44,84	2 -44,84	12	4.09
Wall Con	nd	26,006	c		26,000	0.00		,-	0	0.00 *	•	9	0	0.00
Partitio	on	0				0.00			0	0.00 *	-13,19	B -13,19	8	1.20
Exposed	Floor	0						8,8		3.29 *	-40,34	7 -40,3	\$ 7	3.68
Infiltra	tion	23,648			23,64			150,		59.76 *	-203,31		13	18.53
Sub Tota	1==>	175,682	()	175,68	2 40.95	*	180,	71,	*				
Internal I	Loads									18.65 *		0	0	0.00
Lights		48,700	()	48,70			50,				0	0	0.00
People		30,768			30,76	8 7.17	*	13,		3.10		0	0	0.00
Misc		37,461	(0	37,46	1 8.73	*	42,	971	15.96 *		=	0	0.00
Sub Tota	al==>	116,930	t	0	116,93	0 27.2	5 *	107,	453	39.91 *		0		
Ceiling Lo		0		ס		0 0.0	* (0	0.00 *		0	0	0.00
Outside A		0		0	130,00	0 30.30	* (0	0.00 *		0 -221,8		20.22
Sup. Fan I					5,54	1 1.29	*			0.00 *		5,5		-0.51
Ret. Fan I				0		0.0	*			0.00 *			0	0.00
Duct Heat				0		0.0	* 0			0.00 *			0	0.00
		882			88	2 0.2	1 *		882	0.33 *	-677,40	3 -677,4	03	61.75
OV/UNDR S		002		0 0		0 0.0	o *			0.00 *			0	0.00
Exhaust He				0 0		0 -0.0	0 *			0.00 *			0	0.00
Terminal !	вуравв						*			*				
Grand Tot	al==>	293,494		0 0	429,03	5 100.0	0 *	269,	252	100.00 *	-880,71	1,096,9	77	100.00
			co	OLING COIL S	ELECTION							AREAS		
	Total Ca		Sens Cap.			ing DB/W		Leav	ing DB.	/WB/HR	Gross Tota	al Glass	(sf)	(#)
	(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F I	eg F Gr	ains	Deg F	Deg F	Grains	Floor	14,445		
Main Clg	80.0	960.0	716.1	20,780	77.5	66.7	86.1	62.5	51.4	41.4	Part :	13,707		
	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	294		
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Roof	14,446		0 0
Opt Vent Totals	80.0	960.0									Wall	3,955	3:	18 8
						4 T D D T CALL	(afm)		E	ngineering	CHECKS	TEMPERA	rures	(F)
	HEATING							Heating		% OA	15.0	Type	Clg	Ħtg
	Capacity	Coil A			Type	Coolir	_	_	_	Cfm/Sqft	1.44	SADE	62.8	109.9
	(Mbh)	(cf			Vent	3,1		3,117		Cfm/Ton	259.75	Plenum	75.0	70.0
Main Etg	-547.5	20,	780 65		Infil	56		567	-	Sqft/Ton	180.57	Return	75.0	
Aux Etg	0.0		0 0.		Supply	20,78		20,780	-	Sqrt/10ff Btuh/Sqft		Ret/OA	77.5	
Preheat	-57.4	20,	780 60.		Mincfm		0	0 700		People	122	Runarnd	75.0	
Reheat	0.0		0 0		Return	20,7		20,780		-	15.0	Fn MtrTD	0.1	
Humidif	0.0		0 0		Exhaust	3,1		3,117	-	N OA	1.44	Fn BldTD	0.1	
Opt Vent	0.0		0 0	.0 0.0	Rm Exh		0	0		Cfm/SqFt		Fn Frict	0.2	
Total	-604.9				Auxil		0	0	HTG	g Btuh/SqFt				

MAIN SYSTEM COOLING - ALTERNATIVE 1
BLDG 4109 BASERUM FT LEONARD WOOD

(Main System)

------ Space ------ Coil ------Coil Space Peak OA Rm Supp. Space Peak OA Rm Supp. Space Sens. Lat. Air Lat. Time Cond. Dry Dry Time Cond. Dry Dry Air Flow Load Load Load Mo/Hr DB/WE Blb Bulb Mo/Hr DB/WB Blb Bulb Flow Load Room (Btuh) (Btuh) (F) (F) (F) (Cfm) (Btuh) (Cfm) (Btuh) (F) (F) (F) Number Description 48,815 20,346 9,367 7/16 93 77 75 52.1 1,785 1,785 43.414 7/16 93 77 75 52.1 1 STORE-BARBER 48,815 20.346 93 77 75 52.1 1,785 9,367 43,414 93 77 75 52.1 1.785 1 Total/Ave. Zone 9,367 7/16 93 77 75 52.1 48.815 20.346 1,785 1 Block 7/16 93 77 75 52.1 1,785 43,414 Zone 48.815 20,346 93 77 75 52.1 1,785 1 Total/Ave. 93 77 75 52.1 43,414 9,367 1,785 System 48,815 20,346 9,367 7/16 93 77 75 52.1 1,785 1 Block 7/16 93 77 75 52.1 1,785 43,414 System 28,085 78,170 8,834 7/15 94 78 75 56.9 3,495 2 ADMIN. OFFICES 7/15 94 78 75 56.9 67.218 3,495 78,170 28,085 3,495 94 78 75 56.9 67,218 8.834 2 Total/Ave. 94 78 75 56.9 3.495 Zone 8,834 7/15 94 78 75 56.9 3,495 78,170 28,085 67,218 2 Block 7/15 94 78 75 56.9 3.495 Zone 28.085 3,495 78.170 94 78 75 56.9 2 Total/Ave. 94 78 75 56.9 67,218 8,834 3,495 System 78,170 28.085 8,834 7/15 94 78 75 56.9 3,495 2 Block 7/15 94 78 75 56.9 67,218 3,495 System 44.642 17,086 5,430 7/13 92 77 75 62.4 2,760 3 COCKTAIL LOUNGE 7/13 92 77 75 62.4 2,760 36,935 2,760 44.642 17,086 92 77 75 62.4 5,430 3 Total/Ave. 92 77 75 62.4 2,760 36,935 Zone 17,086 5,430 7/13 92 77 75 62.4 44,642 2,760 36,935 3 Block 7/13 92 77 75 62.4 2,760 44,642 2,760 2,760 36.935 5,430 92 77 75 62.4 3 Total/Ave. 92 77 75 62.4 System 2,760 44,642 17,086 5,430 7/13 92 77 75 62.4 2.760 36,935 7/13 92 77 75 62.4 3 Block System 67,219 26,264 8,024 7/15 94 78 75 64.2 4,540 4,540 58,826 4 BAR - GAME ROOM 7/18 89 75 75 62.8 47.096 10,860 164,782 3,250 7/15 94 78 75 63.8 140,716 7/17 92 76 75 62.8 10,860 5 BALL ROOM 60.413 30,116 13,607 7/13 92 77 75 62.8 3,810 3,810 49,367 7/13 92 77 75 62.8 6 DINING ROOM 24,332 16,351 10,724 7/18 89 75 75 62.8 1,570 7/18 89 75 75 62.8 1,570 20,343 7 KITCHEN 20,780 316,746 119,828 35,605 92 76 75 63.6 269,252 20,780 92 76 75 62.8 4 Total/Ave. Zone 108,992 20,780 320,043 20,780 259,051 34,443 7/17 92 76 75 63.3 4 Block 7/17 92 76 75 63.3 Zone 35,605 92 76 75 63.6 20,780 316,746 119,828 92 76 75 62.8 20,780 269,252 4 Total/Ave. System 20,780 320,043 108,992 34,443 7/17 92 76 75 63.3 4 Block 7/17 92 76 75 63.3 20,780 259,051 System

MAIN SYSTEM HEATING - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

(Main System)

								Space							Coil		
				Peak		OA	Rm	Supp.	Space	Space	Peak	OA	. 1	Ræ	Supp.	Coil	Coil
			Floor	Time	Co	nđ.	Dry	Dry	Air	Sens.	Time	Cond.	D.	ry	Dry	Air	Sens.
Room			Area	Mo/Hr		/WB	B1b	Bulb	Flow	Load	Mo/Hr	DB/WE	B	1b	Bulb	Flow	Load
Number	Dogo	ription	(Sq Ft)	110,		(F)	(F)	(F)	(Cfm)	(Btuh)		(F)	(F)	(F)	(Cfm)	(Btuh)
MUMDEL	Pesc	110000	(=4)				•	•									
1	e TYO D II	-BARBER	2,187	13/ 1	3	1	. 70	96.2	1,785	-49,712	13/ 1	3	1	70	96.2	1,785	-68,574
Zone		Total/Ave.	2,187		3		70	96.2	1,785	-49,712		3	1	70	96.2	1,785	-68,574
Zone		Block	2,187	13/ 1	3	1	70	96.2	1,785	-49,712	13/ 1	3	1	70	96.2	1,785	-68,574
System	1	Total/Ave.	2,187		3	:	L 70	96.2	1,785	-49,712		3	1	70	96.2	1,785	-68,574
System	_	Block	2,187	13/ 1	3	:	L 70	96.2	1,785	-49,712	13/ 1	3	1	70	96.2	1,785	-68,574
-	_	. OFFICES	3,420	13/ 1	3	:	1 70	86.1	3,495	-59,652	13/ 1	3	1	70	86.1	3,495	-96,584
Zone		Total/Ave.	3,420		3	:	L 70	86.1	3,495	-59,652		3	1	70	86.1	3,495	-96,584
Zone	2	Block	3,420	13/ 1	3	:	1 70	86.1	3,495	-59,652	13/ 1	3	1	70	86.1	3,495	-96,584
System	2	Total/Ave.	3,420		3	. :	1 70	86.1	3,495	-59,652		3	1	70	86.1	3,495	-96,584
System	2	Block	3,420	13/ 1	3	. :	1 70	86.1	3,495	-59,652	13/ 1	3	1	70	86.1	3,495	-96,584
3	COCKT	AIL LOUNGE	1,200	13/ 1	3	:	1 70	83.0	2,760	-38,129	13/ 1	3	1	70	03.0	2,760	-67,147
Zone		Total/Ave.	1,200		3	1 :	1 70	83.0	2,760	-38,129		3	1	70	83.0	2,760	-67,147
Zone	3		1,200	13/ 1	3	3	1 70	83.0	2,760	-38,129	13/ 1	3	1	70	83.0	2,760	-67,147
System	3		1,200		3	}	1 70	83.0	2,760	-38,129		3	1	70	83.0	2,760	-67,147
System	3		1,200	13/ 1	. 3	3	1 70	83.0	2,760	-38,129	13/ 1	3	1	70	83.0	2,760	-67,147
-	BAR -	_	2,444	13/ 1	. 3	3	1 70	109.9	4,540	-192,418	13/ 1	3	1	70	109.9	4,540	-227,135
	BALL		7,015	13/ 1	. 3	3	1 70	109.9	10,860	-460,278	13/ 1	3	1	70	109.9	10,860	-543,323
		IG ROOM	1,840	13/ 1	. :	3	1 70	109.9	3,810	-151,479	13/ 1	3	1	70	109.9	3,810	-190,613
	KITCE		3,147	13/ 1	. :	3	1 70	109.9	1,570	-66,541	13/ 1	3	1	70	109.9	1,570	-78,547
Zone	4		14,446			3	1 70	109.9	20,780	-880,716		3	1	70	109.9	20,780	-1,039,619
Zone	4	Block	14,446	13/ 1		3	1 70	109.9	20,780	-880,716	13/ 1	3	1	70	109.9	20,780	-1,039,619
System	4	Total/Ave.	14,446			3	1 70	109.9	20,780	-880,716		3	1	70	109.9	20,780	-1,039,619
System	4		14,446	13/ 1	. :	3	1 70	109.9	20,780	-880,716	13/ 1	3	1	70	109.9	20,780	-1,039,619
Dlacam	•		,														

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

(At time of Coil Peak)

Room Number	Description	Lights Room Sensible (Btuh)	Lights Ret. Air Lites Sensible CLF (Btuh)	People Sensible (Btuh)	People Peopl Latent CLF (Btuh)	Misc. Space Sensible (Btuh)	Misc. Space Latent (Btuh)	Misc. Ret. Air Misc. Sensible CLF (Btuh)	Total (Btuh)
ā	STORE-BARBER	9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
_	1 Total/Ave.	9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
Zone		9,679	0 1.000	2,419	1,740 0.976	o	0	0 0.000	13,838
Zone		9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
System		9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
System 2	1 Block ADMIN. OFFICES	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
_	2 Total/Ave.	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
Zone	2 Block	12,574	0 0.970	1.720	1,600 0.922	7,458	0	0 1.000	23,352
Zone	2 Total/Ave.	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
System	2 Block	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
System 3	COCKTAIL LOUNGE	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
_	3 Total/Ave.	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
Zone	3 Block	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
Zone	3 Total/Ave.	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
System	3 Block	4,888	0 0.770	1.698	1,488 0.746	192	0	0 0.500	8,266
System 4	BAR - GAME ROOM	3,311	0 0.470	2,314	620 0.351	1,430	0	0 0.750	7,675
5	BALL ROOM	3,125	0 0.100	. 0	0 0.000	0	0	0 0.000	3,125
6	DINING ROOM	5,677	0 0.860	6,210	10,400 0.755	0	0	0 0.000	22,287
. 6		18,676	0 1.000	2,750	4,750 1.000	41,942	0	0 1.380	68,118
•	KITCHEN 4 Total/Ave.	30,788	0 0.485	11,274	15,770 0.642	43,372	0	0 1.343	101,204
Zone		•	0 0.768	9,886	20,882 0.486	37,461	0	0 1.160	116,930
Zone	4 Block	48,700	0 0.485	11,274	15,770 0.642	43,372	0	0 1.343	101,204
System	4 Total/Ave.	30,788	0 0.768	9,885	20,882 0.485	37,461	0	0 1.160	116,930
System	4 Block	48,700	0 0.700	3,000	25,052 0.400	,			

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

(At time of Space Peak)

Room Rumber	Description	Lights Room Sensible (Etuh)	Lights Ret. Air Lites Sensible CLF (Btuh)	People Sensible (Btuh)	People Peopl Latent CLF (Btuh)	Misc. Space Sensible (Btuh)	Misc. Space Latent (Btuh)	Misc. Ret. Air Misc. Sensible CLF (Btuh)	Total (Btuh)
1	STORE-BARBER	9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
-		9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
Zone	-	9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
Zone	1 Block 1 Total/Ave.	9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
System		9,679	0 1.000	2,419	1,740 0.976	0	0	0 0.000	13,838
System	1 Block	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
2	ADMIN. OFFICES	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
Zone	2 Total/Ave.	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
Zone	2 Block	•	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
System	2 Total/Ave.	12,574	0 0.970	1,720	1,600 0.922	7,458	0	0 1.000	23,352
System	2 Block	12,574	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,256
3	COCKTAIL LOUNGE	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
Zone	3 Total/Ave.	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
Zone	3 Block	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,266
System	3 Total/Ave.	4,888	0 0.770	1,698	1,488 0.746	192	0	0 0.500	8,255
System	3 Block	4,888	0 0.820	3,575	3,102 0.799	1,030	0	0 0.540	13,483
4		5,776	0 0.820	1,192	3,250 0.151	0	0	0 0.000	25,067
5	BALL ROOM	20,625	0 0.860	6,210	10,400 0.755	0	0	0 0.000	22,287
6	DINING ROOM	5,677	0 1.000	2,750	4,750 1.000	41,942	0	0 1.380	68,118
7		18,676	0 0.800	13,728	21,502 0.587	42,971	0	0 1.330	128,955
Zone	4 Total/Ave.	50,753	0 0.768	9,886	20,882 0.486	37,461	0	0 1.160	116,930
Zone	4 Block	48,700	0 0.768	13,728	21,502 0.587	42,971	0	0 1.330	128,955
System System	4 Total/Ave. 4 Block	50,753 48,700	0 0.768	9,886	20,882 0.486	37,461	0	0 1.160	115,930

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE COOLING LOADS------

(Roof - Skylight) (At time of Coil Peak)

	(At time of Coil Peak)												
			Roof		Roof					8kylight		Skylight	
			Return Air	Roof	Space	Roof	Skylight	Skylight	Skylt	Return Air	Skylt	Space	Skylt
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space
Room			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLTD
Number		Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
					40 451	89.8	0	0	0.000	0	0.0	0	0.0
1	STORE	-BARBER	0	0.0	18,461		0	0	0.000	0	0.0	0	0.0
Zone	1		0	0.0	18,461	89.8	0	0	0.000	0	0.0	0	0.0
Zone	1		0	0.0	18,461	89.8	0	0	0.000	0	0.0	0	0.0
System	1	Total/Ave.	0	0.0	18,461	89.8	0	0	0.000	0	0.0	0	0.0
System	1		0	0.0	18,461	89.8		0	0.000	0	0.0	0	0.0
2	ADMIN	. OFFICES	0	0.0	29,673	92.3	0	0	0.000	0	0.0	o	0.0
Zone	2	Total/Ave.	0	0.0	29,673	92.3	0	0	0.000	0	0.0	0	0.0
Zone	2	Block	0	0.0	29,673	92.3	0		0.000	0	0.0	0	0.0
System	2	Total/Ave.	0	0.0	29,673	92.3	0	0		0	0.0	0	0.0
System	2	Block	0	0.0	29,673	92.3	0	0	0.000	0	0.0	0	0.0
3	COCK	AIL LOUNGE	0	0.0	9,092	80.6	0	0	0.000	_	0.0	0	
Zone	3	Total/Ave.	0	0.0	9,092	80.6	0	0	0.000	0		0	
Zone	3	Block	0	0.0	9,092	80.6	0	0	0.000	0	0.0	0	
System	3	Total/Ave.	0	0.0	9,092	80.6	0	0	0.000	0	0.0	0	
System	3	Block	0	0.0	9,092	80.6	0	0	0.000	0	0.0	0	
4	BAR ·	GAME ROOM	0	0.0	21,205	92.3	0	0	0.000	0	0.0	0	
5	BALL	ROOM	0	0.0	60,864	92.3	0	0	0.000	0	0.0	. 0	
6	DINI	NG ROOM	0	0.0	13,941	80.6	0	0		0	0.0		
7	KITC	HEN	0	0.0	20,352	68.8	0	0		0		0	
Zone	4	Total/Ave.	0	0.0	115,361	85.7	0	0				0	
Zone	4	Block	0	0.0	110,942	81.7	o	0	• • • • •		-	0	
System	4	Total/Ave.	О	0.0	116,361	85.7	0	0	0.000			0	
System	4	Block	0	0.0	110,942	81.7	0	C	0.000		0.0	C	0.0

BUILDING ENVELOPE COOLING LOADS-----(Wall - Window)

(At time of Coil Peak)

			Wall	Wall	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Plenum	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
Room			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
1	STORE	-BARBER	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
Zone		Total/Ave.	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
Zone		Block	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
System	_	Total/Ave.	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
-		Block	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
System 2		. OFFICES	0	0.0	8,805	38.1	1,974	0	0.210	1,039	17.8	0	0.0
_			0	0.0	8,805	38.1	1,974	0	0.210	1,039	17.8	0	0.0
Zone		Total/Ave.	_		8,805	38.1	1,974	0		1,039	17.8	0	0.0
Zone		Block	0	0.0	•		1,974	0		1,039	17.8	0	0.0
System	2	Total/Ave.	0	0.0	8,805	38.1				1,039	17.8	0	0.0
System	2	Block	0	0.0	8,805	38.1	1,974	0		•			
3	COCKI	AIL LOUNGE	0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	0.0

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

PNURLOPE COOLING LOADS -----

BUILDING E	NASTONE COOPING TONDO	
	(Wall - Window)	
(A ¹	t time of Coil Peak)	

Room Number	Description	Wall Plenum Load (Etuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Etuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
	3 Total/Ave.	0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	0.0
Zone	3 Block	0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	
Zone	3 Total/Ave.	0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	0.0
System	3 Block	0	0.0	4,958	37.5	11,484	0	0.650	1,685	13.7	0	0.0
System	BAR - GAME ROOM	0	0.0	5,542	20.1	3,888	О	0.400	1,194	17.8	0	0.0
5	BALL ROOM	0	0.0	. 0	0.0	0	0	0.000	0	0.0	0	
6	DINING ROOM	0	0.0	2,376	37.1	6,912	0	0.580	1,633	13.7	0	
7	KITCHEN	0	0.0	15,554	47.2	1,140	0	0.670	180	16.0	0	
·	4 Total/Ave.	0	0.0	23,471	35.1	11,940	0	0.512	3,007	15.2	0	
Zone	4 Block	0	0.0	26,006	38.9	11,610	0	0.501	3,477	17.6	0	0.0
Zone		0		23,471	35.1	11,940	0	0.512	3,007	15.2	o	0.0
System System	4 Total/Ave. 4 Block	0	0.0	26,006	38.9	11,610	o	0.501	3,477	17.6	0	0.0

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)

(At time of Coil Peak)

Room			Exposed Floor Sensible	Expsd Floor CLTD	Partition Sensible	Part.	Infilt.	Infilt. Sensible	Infilt. Latent	Plenm Dry B Temp.	Ceiling Sensible Load	Envelope Total
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(Cfm)	(Btuh)	(Btuh)	(F)	(Btuh)	(Btuh)
Mullout	20002		, ,	, ,								
1	STORE	-BARBER	0	0.0	0	0.0	186	3,620	7,627	75.0	0	38,759
Zone	1	Total/Ave.	0	0.0	0	0.0	186	3,620	7,627	75.0	0	38,759
Zone	1	Block	0	0.0	0	0.0	185	3,620	7,627	75.0	0	38,759
System	1	Total/Ave.	0	0.0	0	0.0	186	3,620	7,627	75.0	О	38,759
System	1	Block	0	0.0	0	0.0	186	3,620	7,627	75.0	0	38,759
-	ADMIN	. OFFICES	0	0.0	o	0.0	197	3,975	7,234	75.0	0	52,700
Zone	2	Total/Ave.	0	0.0	0	0.0	197	3,975	7,234	75.0	0	52,700
Zone	2	Block	О	0.0	0	0.0	197	3,975	7,234	75.0	0	52,700
System	2	Total/Ave.	0	0.0	0	0.0	197	3,975	7,234	75.0	0	52,700
System	2	Block	o	0.0	0	0.0	197	3,975	7,234	75.0	0	52,700
2) 3 cem	_	AIL LOUNGE	0	0.0	0	0.0	140	2,457	3,942	75.0	0	33,627
Zone	3		0	0.0	0	0.0	140	2,457	3,942	75.0	0	33,627
Zone	3	Block	0		0	0.0	140	2,457	3,942	75.0	0	33,627
	3	Total/Ave.	0		o	0.0	140	2,457	3,942	75.0	0	33,627
System	3	Block	0		0	0.0	140	2,457	3,942	75.0	0	33,627
System	_	GAME ROOM	0		0	0.0	206	4,157	5,956	75.0	0	41,941
4	BALL		0		0	0.0	0	o	0	75.0	0	60,864
5			0		0	0.0	111	1,948	3,207	75.0	0	30,016
6		IG ROOM	0		0	0.0	250	3,790	5,974	75.0	0	46,989
7	KITCE		0		0		567	9,895	15,136	75.0	0	179,810
Zone	-	Total/Ave.			0	-	567	10,087	13,561	75.0	0	175,682
Zone	4	Block	0		-		567	9,895	15,136		0	179,810
System	4	Total/Ave.	0	-	0		567	10,087	13,561	75.0	0	175,682
System	4	Block	0	0.0	0	0.0	30/	10,007	13,301		·	,

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

4 Total/Ave.

4 Block

System

System

-----BUILDING ENVELOPE COOLING LOADS------

(Roof - Skylight)

(At time of Space Peak) Skylight Skylight Roof Roof Space Roof Skylight Skylight Skylt Return Air Skylt Space Skylt Roof Return Air Space Solar Conduction R.A. Conduction Space Sensible Space Return Air Sensible R.A. CLTD Load CLTD Load Solar CLF Load CLTD Solar Load CLTD Room (Btuh) (F) (Btuh) (F) (Btuh) (Btuh) (Btuh) (F) (F) (Btuh) Mumber Description 0 0.0 0 0.0 0 0.000 18,461 89.8 0 0.0 1 STORE-BARBER 0.0 0.0 0 0.000 18,461 89.8 0 0.0 1 Total/Ave. Zone 0.0 0.0 0 0.000 O 89.8 0 0.0 10,461 1 Block Zone 0 0.0 0.0 ٥ 0 0.000 18,461 0 89.8 0.0 0 1 Total/Ave. System 0.0 0 0.0 0 0 0.000 0 10,461 89.8 0 0.0 1 Block System 0.0 0 0.0 0 0 0.000 0 0.0 29,673 92.3 0 2 ADMIN. OFFICES 0.0 0.0 0 0 0 0.000 29,673 92.3 0 0 0.0 2 Total/Ave. 0.0 0 0 0.0 0 0.000 0 0.0 29,673 92.3 0 Zone 2 Block 0.0 0 0.0 0 0.000 0.0 29,673 92.3 0 System 2 Total/Ave. 0 0.000 0 0.0 0.0 0 29,673 92.3 2 Block System 0 0.000 0.0 0 9,092 80.6 0 0.0 3 COCKTAIL LOUNGE 0.0 0.0 0 0.000 0 0 9,092 80.6 0 0.0 3 Total/Ave. Zone 0 0.0 0 0.000 0 0.0 0 0 0.0 9,092 80.6 3 Block 0.0 0 0 0.000 0.0 80.6 0 9.092 0 0.0 3 Total/Ave. System 0 0 0.0 0 0.000 0 0.0 9,092 3 Block System 0.0 0.0 0 0 0.000 0 0 0.0 15,806 68.8 4 BAR - GAME ROOM 0 0.0 0.0 0 0 0 0.000 53,874 81.7 0 0.0 5 BALL ROOM 0 0.0 0 0.0 0 0.000 0 0.0 13,941 80.6 6 DINING ROOM 0 0.000 0 0.0 0 0.0 0 20,352 68.8 0 0.0 7 KITCHEN 0.0 0.0 0 0 0.000 103,972 76.6 0 0 0.0 4 Total/Ave. Zone 0.0 0 0 0.0 0.000 110,942 81.7 0 0.0 0 4 Block Zone 0 0.0 0 0.0 0.000 103,972 76.6 0

------BUILDING ENVELOPE COOLING LOADS------(Wall - Window)

0

0.000

0 0.0

(At time of Space Peak)

110,942 81.7

0 0.0

0 0.0

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
	emany niner	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
1	STORE-BARBER 1 Total/Ave.	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
Zone	=	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
Zone	1 Block	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
System	1 Total/Ave.	0	0.0	7,474	30.3	1,166	0	0.370	412	18.2	0	0.0
System	1 Block	0	0.0	8,805	38.1	1,974	0	0.210	1,039	17.8	0	0.0
2		0	0.0	8,805	38.1	1,974	0	0.210	1,039	17.8	0	0.0
Zone	2 Total/Ave.	_	0.0	8,805		1,974	0	0.210	1,039	17.8	0	0.0
Zone	2 Block	0		8,805		1,974	0	0.210	1,039	17.8	0	0.0
System	2 Total/Ave.	0		•		1,974	0	0.210	1,039	17.8	0	0.0
System 3	2 Block COCKTAIL LOUNGE	0		8,805 4,968		11,484	0		1,685	13.7	0	0.0

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE COOLING LOADS-----(Wall - Window)

(At time of Space Peak)

Room Number	Description	Wall Plenum Load (Etuh)	Wall Plenm CLTD (F)	Wall Space Load (Etuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
		0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	0.0
Zone	3 Total/Ave.	0	0.0	4,968	37.5	11,484	О	0.650	1,685	13.7	0	0.0
Zone	3 Block	0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	0.0
System	3 Total/Ave.	0	0.0	4,968	37.5	11,484	0	0.650	1,685	13.7	0	0.0
System	3 Block BAR - GAME ROOM	0	0.0	11,332	41.1	7,884	0	0.820	1,073	16.0	0	0.0
4	BAR - GAME ROOM BALL ROOM	0	0.0	0	0.0	0	0	0.000	0	0.0	0	0.0
5		0	0.0	2,376	37.1	6,912	0	0.580	1,633	13.7	0	0.0
6	DINING ROOM	0	0.0	15,554	47.2	1,140	0	0.670	180	16.0	0	0.0
7	RITCHEN 4 Total/Ave.	0	0.0	29,262	43.7	15,936	0	0.686	2,886	14.5	0	
Zone		0	0.0	26,006		11,610	0	0.501	3,477	17.6	0	0.0
Zone	4 Block	0		29,262		15,936	0	0.686	2,886	14.6	0	0.0
System System	4 Total/Ave. 4 Block	0		26,006	38.9	11,610	0	0.501	3,477	17.6	0	0.0

BUILDING ENVELOPE COOLING LOADS------

(Exposed Floor - Partitions - Infiltration)

(At time of Space Peak)

Room Number	Descr	iption	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Etuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envalope Total (Btuh)
1	STORE	-BARBER	0	0.0	o	0.0	186	3,620	7,627	75.0	0	38,759
Zone	1	Total/Ave.	0	0.0	0	0.0	186	3,620	7,627	75.0	0	38,759
Zone	1	Block	0	0.0	0	0.0	186	3,620	7,627	75.0	o	38,759
System	1		0	0.0	0	0.0	186	3,620	7,627	75.0	0	38,759
System	1	Block	0	0.0	0	0.0	186	3,620	7,627	75.0	С	38,759
-	-	. OFFICES	0	0.0	0	0.0	197	3,975	7,234	75.0	0	52,700
Zone	ADMIN 2	Total/Ave.	0		О	0.0	197	3,975	7,234	75.0	0	52,700
Zone	2	Block	0	0.0	0	0.0	197	3,975	7,234	75.0	0	52,700
	2	Total/Ave.	0		0	0.0	197	3,975	7,234	75.0	0	52,700
System	_	Block	0		0	0.0	197	3,975	7,234	75.0	0	52,700
System	2	AIL LOUNGE	0		0	0.0	140	2,457	3,942	75.0	0	33,627
_ 3			0		0	0.0	140	2,457	3,942	75.0	o	33,627
Zone		Total/Ave.	0		0		140	2,457	3,942	75.0	0	33,627
Zone	3	Block	0	-	0		140	2,457	3,942	75.0	0	33,627
System	3		_		0		140	2,457	3,942	75.0	0	33,627
System	3		0		0		206	3,123	4,922	75.0	0	44,141
4	BAR -		0		0		0	0	0	75.0	0	53,874
5	BALL		0		0		111	1,948	3,207	75.0	0	30,016
6	-	IG ROOM	0		0		250	3,790	5,974	75.0	0	46,989
7	KITCE		0				567	8,862	14,103		0	175,020
Zone	4	Total/Ave.	0		0		567	10,087	13,561		0	175,682
Zone	4		C		0		567	8,862	14,103		o	175,020
System System		Total/Ave. Block	c		o o		567	10,087	13,561		0	175,682

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS------(Roof - Skylight)

(At time of Coil Peak)

					(A1	t time (of Coil Peak)						
			Roof		Roof					Skylight		Skylight	
			Return Air	Roof	Space	Roof	Skylight	Skylight	Skylt	Return Air	Skylt	Space	Skylt
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space
_			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLTD
Room		Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number		Description	(200)	(-,	, ,	•						_	
	amonn	-BARBER	0	0.0	-13,774	-67.0	0	0	0.000	0	0.0	0	0.0
		Total/Ave.	0	0.0	-13,774		0	0	0.000	0	0.0	0	0.0
Zone	_	Block	0	0.0	-13,774		0	0	0.000	0	0.0	0	0.0
Zone	1		0	0.0	-13,774	-67.0	0	0	0.000	0	0.0	0	0.0
System System	_	Block	0	0.0	-13,774	-67.0	0	0	0.000	0	0.0	0	0.0
2 system		. OFFICES	0	0.0	-21,539	-67.0	0	0		0	0.0	0	
Zone	2	Total/Ave.	0	0.0	-21,539	-67.0	0	0	0.000	0	0.0	0	
Zone	2	Block	0	0.0	-21,539	-67.0	0	0		0	0.0	0	
System	2	Total/Ave.	О	0.0	-21,539	-67.0	0	0		0		0	
System	-	Block	0	0.0	-21,539	-67.0	0	0		0		-	
3	-	AIL LOUNGE	0	0.0	-7,558	~67.0	0	0		0		0	
Zone	3	Total/Ave.	0	0.0	-7,558	-67.0	0	0		0		0	
Zone	3	Block	0	0.0	-7,558	-67.0	0	O		0		0	
System	3	Total/Ave.	0	0.0	-7,558	-67.0	0	c					
System	3	Block	0	0.0	-7,558	-67.0	0	c		_			
4	BAR -	- GAME ROOM	0	0.0	-15,392	-67.0	0	C					
5	BALL	ROOM	0	0.0	-44,180	-67.0	. 0	(0.0
6	DINI	NG ROOM	0	0.0	-11,588	-67.0	0	(0.000				0.0
7	KITC	HEN	0	0.0	-19,820	-67.0	, 0	(0.000		0.0		0.0
Zone	4		. 0	0.0	-90,981	-67.0	, 0	(0.000	•	0.0		0.0
Zone	4	Block	o	0.0	-90,981	-67.0	0	•	0.000		0.0		0.0
System	4	Total/Ave		0.0	-90,981	-67.0	0	4	0.000	•	0.0		0.0
System	4	Block	c	0.0	-90,981	-67.0	0		0.000)	0.0	'	0.0
-4													

BUILDING ENVELOPE HEATING LOADS------(Wall - Window)

(At time of Coil Peak)

Room Number	Descr	iption	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Etuh)		Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
_			0	0.0	-16,527	-67.0	0	0	0.000	-1,597	-67.0	0	0.0
1		-BARBER	0	0.0	-16,527	•	0	0	0.000	-1,597	-67.0	0	0.0
Zone	-	Total/Ave.	0	0.0	-16,527	-67.0	0	0	0.000	-1,597	-67.0	0	0.0
Zone		Block	0	0.0	-16,527		0	0	0.000	-1,597	-67.0	0	0.0
System	1				-16,527	-	0	0	0.000	-1,597	-67.0	0	0.0
System	1	Block	0	0.0	•		0	0	0.000	-4,121	-67.0	o	0.0
2		. OFFICES	0	0.0	-15,484		0		0.000		-67.0	0	0.0
Zone	2	Total/Ave.	0	0.0	-15,484			0			-67.0	0	0.0
Zone	2	Block	0	0.0	-15,484		0	_		-	-67.0	О	0.0
System	2	Total/Ave.	0	0.0	-15,484	-67.0	0		0.000	-		0	
System	2	Block	0	0.0	-15,484	-67.0	0	0		-	-67.0	-	
-	COCK	PATI. LOUNGE	0	0.0	-8,876	-67.0	0	0	0.000	-8,691	-67.0	0	0.0

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS------(Wall - Window)

(At time of Coil Peak)

Room Number	Descripti	on	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
			_		-8,876	-67.0	0	0	0.000	-8,681	-67.0	C	0.0
Zone		al/Ave.	0	0.0	-8,876		0	0	0.000	-8,681	-67.0	c	0.0
Zone	3 Blo		0		-8.876		0	0	0.000	-8,681	-67.0	0	0.0
System		al/Ave.	0	0.0	-8,876		0	0	0.000	-8,681	-67.0	0	0.0
System	3 Blo		0	0.0	-18,474		0	0	0.000	-4,735	-67.0	0	0.0
4		DE ROOM	0	0.0	-16,4/4	0.0	0	o	0.000	0	0.0	o	0.0
5	BALL ROOM	f	0	0.0	_		0	0	0.000	-8,418	-67.0	0	0.0
6	DINING RO	MOX	0	0.0	-4,290		0	0		-793	-67.0	0	0.0
7	KITCHEN		0	0.0	-22,078		0	0		-13,945	-67.0	0	0.0
Zone	4 Tot	tal/Ave.	0	0.0	-44,842		0	0	-	-13,946		0	0.0
Zone	4 Blo	ock	0	0.0	-44,842		0	0		-13,946		0	0.0
System	4 Tot	tal/Ave.	0	0.0	-44,842		_	0		-13,946		o	0.0
System	4 Blo	ock	0	0.0	-44,842	-67.0	0	U	0.000	13,240	3		

BUILDING ENVELOPE HEATING LOADS-----(Exposed Floor - Partitions - Infiltration)

(At time of Coil Peak)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm · Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
	STORE-BARBER	-4,579	-67.0	0	0.0	186	-13,236	0	70.0	0	-49,712
1	1 Total/Ave.		-67.0	0	0.0	186	-13,236	0	70.0	0	-49,712
Zone	1 Block	-4,579		0	0.0	186	-13,236	0	70.0	0	-49,712
Zone		-4,579		0	0.0	186	-13,236	0	70.0	0	-49,712
System		-4,579	-67.0	0	0.0	186	-13,236	0	70.0	0	-49,712
System		-4,489	-67.0	0	0.0	197	-14,018	0	70.0	0	-59,652
2	2 Total/Ave.	-4,489	-67.0	0	0.0	197	-14,018	0	70.0	0	-59,652
Zone		-4,489		0	0.0	197	-14,018	0	70.0	0	-59,652
Zone		-4,489		0	0.0	197	-14,018	0	70.0	0	-59,652
System		-4,489		0		197	-14,018	0	70.0	0	-59,652
System	2 Block	-3,053		0		140	-9,962	0	70.0	0	-38,129
3	COCKTAIL LOUNGE	-3,053		0		140	-9,962	0	70.0	0	-38,129
Zone	3 Total/Ave.	-3,053		0		140	-9,962	0	70.0	0	-38,129
Zone	3 Block	-3,053		0		140	-9,962	0	70.0	0	-38,129
System	3 Total/Ave.	-3,053		0		140	-9,962	0	70.0	0	-38,129
System	3 Block	-5,342		0		206	-14,659	0	70.0	0	-58,601
4	BAR - GAME ROOM	-3,342		0		0	0	0	70.0	0	-44,181
5	BALL ROOM			0		111	-7,899	0	70.0	0	-33,990
6	DINING ROOM	-1,796		0		250	-17.790	. 0	70.0	0	-66,541
7		-6,060		c		567	-40,347	O	70.0	О	-203,313
Zone	4 Total/Ave.	-13,198				567	-40,347	c c	70.0	0	-203,313
Zone	4 Block	-13,198		0		567	-40,347	C	70.0	0	-203,313
System	4 Total/Ave.	-13,198				567	-40,347			0	-203,313
System	4 Block	-13,198	-67.0	C	0.0	567	-40,34/				

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

(At time of Space Peak)

					/ν	C CAME .	or phase real,						
			Roof		Roof					Skylight		8kylight	
			Return Air	Roof	Space	Roof	Skylight	Skylight	skylt	Return Air	Skylt	Space	Skylt
			Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space
-			Load	CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLTD
Room	,	Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number		Description	(200)	ν-,	•	•							
	amone	-Barber	O	0.0	-13,774	-67.0	0	0	0.000	0	0.0	0	0.0
_ 1			0	0.0	-13,774		0	0	0.000	0	0.0	0	0.0
Zone	1		0	0.0	-13,774		0	0	0.000	0	0.0	0	0.0
Zone	_	Block	0	0.0	-13,774		0	0	0.000	0	0.0	0	0.0
System	1	Total/Ave.	0	0.0	-13,774		0	0	0.000	0	0.0	0	0.0
System	1	Block	0	0.0	-21,539		0	0	0.000	0	0.0	o	0.0
2		. OFFICES	-	0.0	-21,539		0	0	0.000	0	0.0	0	0.0
Zone	2	Total/Ave.	0	0.0	-21,539		0	0	0.000	0	0.0	0	0.0
Zone	2	Block	0	0.0	-21,539	-67.0	0	0	0.000	0	0.0	0	0.0
System	2	Total/Ave.	0		-21,539		0	0	0.000	0	0.0	0	0.0
System	2	Block	0	0.0	-21,539		0	0		0	0.0	0	0.0
3	COCK	AIL LOUNGE	0	0.0	•		0	0		o	0.0	0	0.0
Zone	3	Total/Ave.	0	0.0	-7,558		0	0		0	0.0	0	0.0
Zone	3	Block	0	0.0	-7,558			0		c	0.0	c	0.0
System	3	Total/Ave.		0.0	-7,558		0	c		-		c	0.0
System	3	Block	0	0.0	-7,558		0	•		-		c	0.0
4	BAR	- GAME ROOM	0	0.0	-15,392			0					
5	BALL	ROOM	0	0.0	-44,180								
6	DINI	NG ROOM	0	0.0	-11,588	-67.0		C				`	
7	KITC	HEN	0	0.0	-19,820	-67.0	0	C					
Zone	4	Total/Ave.	, 0	0.0	-90,981	-67.0	0	(0.0		
Zone	4	Block	0	0.0	-90,981	-67.0	0	(0.000		0.0		
System	4	Total/Ave	. 0	0.0	-90,981	-67.0	0	(0.000		0.0		0.0
System	4	Block	0	0.0	-90,981	-67.0	0	(0.000	, (0.0	•	0.0
512 com	•												

(At time of Space Peak)

Room Number	Descr	iption	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)		Glass Space Conduction (Etuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
	amon n	**************************************	0	0.0	-16,527	-67.0	0	0	0.000	-1,597	-67.0	0	0.0
1		-BARBER	0		-16,527	•	0	0	0.000	-1,597	-67.0	0	0.0
Zone		Total/Ave.	0		-16,527		0	0	0.000	-1,597	-67.0	0	0.0
Zone	_	Block	0		-16,527		0	0	0.000	-1,597	-67.0	0	0.0
System		Total/Ave.	0		-16,527		0	o	0.000	-1,597	-67.0	0	0.0
System		Block	0		-15,484		0	0	0.000	-4,121	-67.0	0	0.0
2		. OFFICES	. 0		-15,484		0	0	0.000	-4,121	-67.0	0	0.0
Zone		Total/Ave.	_		-15,484		0	0	0.000	-4,121	-67.0	0	0.0
Zone		Block	0		-15,484		0	0	0.000	-4,121	-67.0	0	0.0
System		Total/Ave.	0				0			-4,121	-67.0	0	0.0
System 3	_	Block TAIL LOUNGE	0		-15,484 -8,876		0	_		-8,681		0	0.0

HEATING LOADS AT SPACE PEAR - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS-----(Wall - Window)

(At time of Space Peak)

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	R.A. CLTD (F)
			0.0	-8,875	-67.0	0	0	0.000	-8,581	-67.0	0	0.0
Zone	3 Total/Ave.	0	0.0	-8,876		0	0	0.000	-8,681	-67.0	0	0.0
Zone	3 Block	0	0.0	-8,876		0	0	0.000	-8,681	-67.0	0	0.0
System	3 Total/Ave.	0	0.0	-8,876		0	0	0.000	-8,681	-67.0	0	
System	3 Block	0	0.0	-18,474		0	0	0.000	-4,735	-67.0	0	
4	BAR - GAME ROOM	0	0.0	0		0	0	0.000	0	0.0	0	
5	BALL ROOM	0		-4,290		0	0	0.000	-8,418	-67.0	0	
6	DINING ROOM	0	0.0	-22,078		0	o	0.000	-793	-67.0	0	
7	KITCHEN	0	0.0	-44,842		0	0	0.000	-13,946	-67.0	0	
Zone	4 Total/Ave.	0	0.0	-44,842		0	o	0.000	-13,946	-67.0	0	0.0
Zone	4 Block	-		-44,842		0	0	0.000	-13,946	-67.0	0	0.0
System System	4 Total/Ave. 4 Block	0		-44,842		0	0	0.000	-13,946	-67.0	0	0.0

(Exposed Floor - Partitions - Infiltration)

(At time of Space Peak)

Room Number	Descr:	iption	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
		-Barber	-4,579	-67.0	0	0.0	186	-13,236	0	70.0	0	-49,712
1		Total/Ave.	-4,579	-67.0	0	0.0	186	-13,236	0	70.0	О	-49,712
Zone			-4,579	-67.0	0	0.0	186	-13,236	0	70.0	0	-49,712
Zone		Block	-4,579		0	0.0	185	-13,236	0	70.0	0	-49,712
System	1		-4,579		0	0.0	186	-13,236	0	70.0	0	-49,712
System	1	Block	-4,489		0	0.0	197	-14,018	0	70.0	0	-59,652
2		. OFFICES	-4,489 -4,489		0	0.0	197	-14,018	0	70.0	0	-59,652
Zone	2				0	0.0	197	-14,018	0	70.0	0	-59,652
Zone	2	Block	-4,489		0	0.0	197	-14,018	0	70.0	0	-59,652
System	2	Total/Ave.	-4,489		0		197	-14,018	0	70.0	0	-59,652
System	_	Block	-4,489		0		140	-9,962	0	70.0	0	-38,129
3	COCKI	AIL LOUNGE	-3,053		_		140	-9,962	0	70.0	0	-38,129
Zone	3	Total/Ave.	-3,053		0		140	-9,962	0	70.0	0	-38,129
Zone	3	Block	-3,053		0			-9,962	0	70.0	0	-38,129
System	3	Total/Ave.	-3,053	-67.0	0		140	•	0	70.0	0	-38,129
System	3	Block	-3,053	-67.0	0		140	-9,962	0		0	-58,601
4	BAR -	GAME ROOM	-5,342	-67.0	0		206	-14,659	0		0	-44,181
5	BALL	ROOM	0	. 0.0	0		0	0	0		0	-33,990
6	DININ	IG ROOM	-1,796	-67.0	0	0.0	111	-7,899	=		0	-66,541
7	KITCE	IEN	-6,060	-67.0	C	0.0	250	-17,790	0		0	-203,313
Zone	4	Total/Ave.	-13,198	-67.0	C	0.0	567	-40,347	C		_	-203,313
Zone	4	Block	-13,198	-67.0	c	0.0	567	-40,347	C		0	-203,313
System	4	Total/Ave.	-13,198	-67.0	C	0.0	567	-40,347	. 0		0	
System	4		-13,198	-67.0	C	0.0	567	-40,347	C	70.0	0	-203,313

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

------AIRFLOW COOLING LOADS------(At time of Coil Peak)

					Opti	onal Ventila	ation		- Вуравв		
			Ventilation		op						Ov/Undr
		. 1 - 61	Sensible	Latent A	Airflow	Sensible	Latent	Airflow	Sensible	Latent	Sizing
			_			(Btuh)	(Btuh)	(Cfm)	(Btuh)	(Btuh)	(Btuh)
I	Description	(CIM)	(Bcuit)	(204)		•					
		250	B 211	10.979	0	0	0	0	o	0	183
		_	-	•	0	0	0	0	0	0	183
_			•	•	0	0	0	0	0	0	183
1		-				0	0	0	0	0	183
1			•			0	0	0	0	0	183
1			•			0	0	0	0	0	0
			•	•	=	0	0	0	0	0	0
_			•	•		0	0	0	0	0	0
2			•	•	-	0	0	0	О	0	0
2						0	o	0	0	0	0
2			•	•		0	c	0	0	0	471
COCKI					-		c	. 0	0	0	471
3			•	-	_	-	Ċ	. 0	0	0	471
3			•		=			. 0	0	О	471
3				•	-		(0	0	0	471
_			*	•	-	-			0	0	9,226
						-		0	0	0	65,025
			- ·	•	_	_			0	0	10,671
DINI	NG ROOM		•			=			0	0	-84,040
KITCH	HEN	235	· ·	•		_		-	0	0	882
4	Total/Ave.	3,117	-	•		_		-	=	0	882
4	Block	3,117	55,450			_		•	-	=	882
4	Total/Ave.	3,117	60,215	•		-		•	=	-	882
4	Block	3,117	55,450	74,549	0	0		0 0	Ü	·	
	STORE- 1 1 1 1 1 ADMIN 2 2 2 2 COCKT 3 3 3 BAR- BALL DINII KITCI 4 4	1 Block 1 Total/Ave. 1 Block ADMIN. OFFICES 2 Total/Ave. 2 Block 2 Total/Ave. 2 Block COCKTAIL LOUNGE 3 Total/Ave. 3 Block 3 Total/Ave. 4 Total/Ave. 4 Block	### Airflow Cfm) ### STORE-BARBER	Airflow Bensible (Cfm) (Btuh) STORE-BARBER 268 5,211 1 Total/Ave. 268 5,211 1 Block 268 5,211 1 Total/Ave. 268 5,211 1 Total/Ave. 268 5,211 2 Block 268 5,211 2 Block 268 5,211 2 Total/Ave. 524 10,579 2 Total/Ave. 524 10,579 2 Block 524 10,579 2 Total/Ave. 524 10,579 2 Block 524 10,579 2 Block 524 10,579 2 Total/Ave. 524 10,579 3 Total/Ave. 414 7,266 3 Total/Ave. 414 7,266 3 Total/Ave. 414 7,266 3 Total/Ave. 414 7,266 BAR - GAME ROOM 681 13,742 BALL ROOM 1,629 32,872 DINING ROOM 572 10,030 KITCHEN 235 3,570 4 Total/Ave. 3,117 60,215 4 Block 3,117 55,450 4 Total/Ave. 3,117 60,215	Airflow Sensible (Btuh) STORE-BARBER 268 5,211 10,979 1 Total/Ave. 268 5,211 10,979 1 Block 268 5,211 10,979 1 Total/Ave. 268 5,211 10,979 1 Block 268 5,211 10,979 1 Block 268 5,211 10,979 2 Total/Ave. 268 5,211 10,979 2 Total/Ave. 524 10,579 19,251 2 Total/Ave. 524 10,579 19,251 2 Total/Ave. 524 10,579 19,251 2 Total/Ave. 524 10,579 19,251 2 Total/Ave. 524 10,579 19,251 2 Total/Ave. 524 10,579 19,251 2 Block 524 10,579 19,251 2 Block 524 10,579 19,251 3 Total/Ave. 414 7,266 11,656 3 Total/Ave. 414 7,266 11,656 3 Total/Ave. 414 7,266 11,656 3 Total/Ave. 414 7,266 11,656 3 Block 414 7,266 11,656 3 Block 414 7,266 11,656 BAR - GAME ROOM 681 13,742 19,688 BALL ROOM 1,629 32,872 47,096 DINING ROOM 572 10,030 16,510 KITCHEN 235 3,570 5,627 4 Total/Ave. 3,117 60,215 88,921 4 Block 3,117 55,450 74,549 4 Total/Ave. 3,117 55,450 74,549	Name	Name	Airflow Sensible Latent Airflow Sensible Latent	Description Coffm CBtuh CBtuh CCfm CBtu	Name	Description Coffm

HEATING LOADS AT COIL PEAR - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

(At time of Coil Peak)

			**	lation	On.	Vent	Re	heat	Hum:	ldif	
			Airflow	Sensible		Sensible		Sensible	Airflow	Latent	Total
Room	_		(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Btuh)
Number		escription	268	-19,053	0	(====,		0	0	0	-19,053
1		BARBER		-19,053	0	0	٥	0	0	0	-19,053
Zone		Total/Ave.	268	•	0	0	0	0	0	0	-19,053
Zone		Block	268	-19,053	0	0		0	0	0	-19,053
System	1	Total/Ave.	268	-19,053	_	0		0	С	0	-19,053
System	1	Block	268	-19,053	0	_		0	_	0	-37,305
2	ADMIN.	. OFFICES	524	-37,305	0	0	-	0	_	0	-37,305
Zone	2	Total/Ave.	524	-37,305	0	O	_	-		0	-37,305
Zone	2	Block	524	-37,305	0	C		O	_	0	-37,305
System	2	Total/Ave.	524	-37,305	0	C	0	O		•	•
System	2	Block	524	-37,305	0	C	0	C	0	0	-37,305
3	COCET	AIL LOUNGE	414	-29,460	0	C	0	c	0	0	-29,460
_	3	Total/Ave.	414	-29,460	0	0	0	C) 0	0	-29,460
Zone		Block	414	-29,460	0	C) 0	c	0	0	-29,460
Zone	3		414	-29,460		() 0	(0	0	-29,460
System	3	Total/Ave.		-29,460	0	(. 0	C	0	0	-29,460
System	3	Block	414		0				. 0	0	-48,459
4		GAME ROOM	681	-48,459	_	,			0	0	-115,918
5			1,629	-115,918			0		0	0	-40,667
6	DININ	G ROOM	572	-40,667					0	0	-16,758
7	KITCH	EN	235	-16,758			0		-	0	-221,802
Zone	4	Total/Ave.	3,117	-221,802	0		0		-	0	-221,802
Zone	4	Block	3,117	-221,802	0		0		0	-	-221,802
System	4	Total/Ave.	3,117	-221,802	0		0		0 0	0	•
System		Block	3,117	-221,802	0		D 0)	0 0	0	-221,802
-,500	_		•								

COOLING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

(At time of Coil Peak)

								Cooling						
		-	Duct	Supply	Return	System		System	Room			Run		System
			Heat	Pan	Fan	Exhaust		Exhaust	Exhaust	Ducted			Corridr	Return
Room			Pickup	Heat	Heat	Heat Loss	Total	Airflow					Airflow	Allilow
Number		Description	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
1	auvo D.E.	-BARBER	0	190	0	o	190	268	0	1,785	0	0		
	1		0	190	0	0	190	268	0	1,785	0	0		1,785
Zone	1		0	190	0	0	190	268	0	1,785	0			1,785
Zone			0	190	0	0	190	268	. 0	1,785	0			1,785
System	1		0	190	0	0	190	268		1,785	0			
System	1	. OFFICES	0	373	o	. 0	373	524		3,495	0			•
_	ADMIN 2		0	373	C	0	373	524		3,495				•
Zone	2		0	373	c	0	373	3 524	, (3,495		, () C	
Zone	_	Total/Ave.	0	373	c	0	373	3 524	, (3,495) (, (- •
System	2		0	373			37:	3 524	. (3,495	, ,) (, (•
System	2	Block	0	442	(44:	2 414	s (2,760) () (, (2,760
3		TAIL LOUNGE	0	442			44:	2 414	4 1	2,760	, () () (2,760
Zone	3		0	442		0	44	2 41	4 (2,760) (, () (2,760
Zone	3		0	442		0	44	2 41	4	2,76) (0 (י פ	2,760
System	3		0	442		0	44	2 41	4	2,76) (0 (0 (2,760
System	3		0	1,211		0 0	1,21	1 68	1	0 4,54	o (0	0 (4,540
4	BAR		0	2,896		0 0	2.89	6 1,62	9	0 10,86	0 0	0	0 (10,860
5		ROOM		1,016		0 0	1,01	-	2	0 3,81	0	0	0 1	3,810
6		NG ROOM	0	•		0 0	41	-		0 1,57	0	0	0	1,570
7	KITC		0	419		0 0	5,54			0 20,78	0	0	0	20,780
Zone	4		0	5,541		0 0	5,54	-	•	0 20,78		0	0	0 20,780
Zone	4	Block	0	5,541		•	5,54	•		0 20,78		0	c	0 20,780
System	4	Total/Ave.	О	5,541		•	5,54	•		0 20,78		0	0	0 20,780
System	4	Block	0	5,541		0 0	5,59	1 2,11	. •	20,10	-	-		

HEATING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

		_					- Heating						
			Supply	Return	System		System	Room			Run		System
			Fan	Fan	Exhaust		Exhaust	Exhaust	Ducted	Plenum	Around	Corridr	Return
_			Heat	Heat	Heat Loss	Total	Airflow	Airflow	Airflow		Airflow	Airflow	Airflow
Room	_	escription	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
Number	b	escription	(200)	(
_	amon H	-BARBER	190	0	o	190	268	0	1,785	0	0	_	•
_	STORE 1		190	0	0	190	268	0	1,785	0			•
Zone	1		190	0	o	190	268	0	1,785	0		_	-
Zone	_		190	0	0	190	268	0	1,785	0			•
System	1	Block	190	o	0	190	268	0	1,785	0		_	•
System	1		373	0	0	373	524	. 0	3,495	0			•
_	ADMIN 2	Total/Ave.	373	0	0	373	524	. 0	3,495	O	. 0		•
Zone	2	Block	373	0	0	373	524		3,495	C			
Zone	_	Total/Ave.	373	0	0	373	524		3,495		, 0	, ,	•
System	2		373	0	0	373	524		3,495		, ,	, (•
System	2	Block	442	0	0	442	414		2,760) () (, (
3		AIL LOUNGE		0		442	414		2,760) () () (2,760
Zone	3	Total/Ave.	442	0		442	414	. (2,760) (, (, (2,760
Zone	3		442			442	41	i (2,760	, (, () (2,760
System	3	Total/Ave.	442	0		442	41-		2,760) (D (2,760
System	3		442	0	_	1,211			4,540	, (0 (4,540
4	BAR		1,211	0		2,896			10,860	, ,	0 (0 (10,860
5	BALL		2,896	0		1,016	•		3,81	,	0	0, (3,81
6		NG ROOM	1,016	O .	_	419		_	1,570		0	0	0 1,57
7	KITC		419	C		5,541		-	20,78		0	0	0 20,78
Zone	4		5,541			5,541	•	•	20,78		0	0	0 20,78
Zone	4	Block	5,541		_	5,541	-	•	0 20,78		0	0	0 20,78
Bystem	4	Total/Ave.	5,541		_	•	•	•	0 20,78		0	0	0 20,78
System	4	Block	5,541	(0	5,541	3,11	,		-			

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

ZONE PSYCHROMETRICS - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

Zone 1

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid.	Enthalpy (Btu/Lb)	Temp. Diff. (F)
				Ratio (GR)		
Space	75.0	61.2	46.1	62.7	27.8	
Main System						0.0
Return Air Heat Pickup						
Return Fan						0.0
Return Air	75.0	61.2	46.1	62.7	27.8	
Outdoor Air	93.3	77.4	49.9	124.1	41.9	
Return/Outdoor Air Mix	77.7	64.0	48.1	71.9	29.9	
Blow through Fan						0.0
Entering Coil	77.7	64.0	48.1	71.9	29.9	
Leaving Coil	52.0	50.8	92.5	56.1	21.2	
Draw Through Fan						0.0
Duct Frictional Heat						0.1
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	52.1	50.8	92.1	56.1	21.2	
Supply Air	52.1	50.8	92.1	56.1	21.2	

Percent Outside Air 15.00 (%)
Sensible Heat Ratio (SHR) 0.833
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 1,785 (Cfm)

sy: Trane Customer Direct Bollico Metal

ZONE PSYCEROMETRICS - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

PSYCHROMETRIC STATE POINTS

Zone 2

Space	Dry Bulb (F) 75.0	Wet Bulb (F) 62.5	Relat. Humid. (%)	Humid. Ratio (GR) 69.1	Enthalpy (Btu/Lb) 28.8	Temp. Diff. (F)
Main System				•		
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	75.0	62.5	50.7	69.1	28.8	
Outdoor Mir	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	77.8	65.1	51.5	77.3	30.8	
Blow through Fan						0.0
Entering Coil	77.8	65.1	51.5	77.3	30.0	
Leaving Coil	56.8	55.2	90.8	65.7	23.8	
Draw Through Fan						0.0
Duct Frictional Heat						0.1
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	56.9	55.2	90.5	65.7	23.9	
Supply Air	56.9	55.2	90.5	65.7	23.9	

Percent Outside Air 15.00 (%)
Sensible Heat Ratio (SHR) 0.882
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 3,495 (Cfm)

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

ZONE PRYCHROMETRICS - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

------PSYCHROMETRIC STATE POINTS

Zone 3

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	65.1	59.9	81.9	30.8	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	75.0	65.1	59.9	81.9	30.8	
Outdoor Air	91.5	77.0	52.7	124.0	41.5	
Return/Outdoor Air Mix	77.5	67.1	59.3	88.2	32.4	
Blow through Fan						0.0
Entering Coil	77.5	67.1	59.3	88.2	32.4	
Leaving Coil	62.2	60.1	89.0	78.5	27.1	
Draw Through Fan						0.0
Duct Frictional Heat						0.1
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	62.4	60.2	88.5	78.5	27.2	
Supply Air	62.4	60.2	88.5	78.5	27.2	

 Percent Outside Air
 15.00 (%)

 Sensible Heat Ratio (SHR)
 0.845

 Percent Supply Air Bypassing Coil
 0.00 (%)

 Coil Airflow
 2,760 (Cfm)

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

BYSTEM PSYCHROMETRICS - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

------PSYCHROMETRIC STATE POINTS

System 4

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	75.0	64.9	59.1	80.8	30.6	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	75.0	64.9	59.1	80.8	30.6	
Outdoor Air	91.7	75.9	49.3	116.6	40.4	
Return/Outdoor Air Mix	77.5	66.7	57.9	86.1	32.1	
Blow through Fan						0.1
Entering Coil	77.6	66.8	57.8	86.1	32.1	
Leaving Coil	62.6	60.3	87.8	78.4	27.2	
Draw Through Fan						0.0
Duct Frictional Heat						0.2
						0.0
Supply Duct Heat Gain		60.3	87.2	78.4	27.3	
Cold Deck Supply Air	62.8	60.3				
Supply Air	62.8	60.3	87.2	78.4	27.3	

Percent Outside Air 15.00 (%)
Sensible Heat Ratio (SHR) 0.885
Percent Supply Air Bypassing Coil 0.00 (%)
Coil Airflow 20,780 (Cfm)

BUILDING U-VALUES - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

BUILDING U-VALUES-----

						_	u-Valı		- -			Room Mass	Room Capac.
Room					Summr	Wintr		Summr	Wintr			(1b/	(Btu/
Number	Descrip	tion	Part.	ExFlr	Skylt	Skylt	Roof	Windo	Windo	Wall	Ceil.	sqft)	sqft/F)
1	STORE-BA	RRER	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	46.8	10.02
Zone		tal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	46.8	10.02
System		tal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	46.8	10.02
2	ADMIN. C		0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	46.2	9.89
Zone		otal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	46.2	9.89
System		otal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	46.2	9.89
3 3		L LOUNGE	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	54.9	11.63
Zone		otal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	54.9	11.63
System		otal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	54.9	11.63
4		AME ROOM	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	54.6	11.58
5	BALL RO		0.388	0.000	0.000	0.000	0.094	0.000	0.000	0.000	0.000	28.6	6.37
6	DINING		0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	41.9	9.04
7	KITCHEN		0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	51.4	10.93
Zone		otal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	39.6	8.58
System		otal/Ave.	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	39.6	8.58
Buildi		5022, 11101	0.388	0.670	0.000	0.000	0.094	0.621	0.655	0.184	0.000	42.3	9.11

PAGE 35

BUILDING AREAS - ALTERNATIVE 1 BLDG 4109 BABERUN FT LEONARD WOOD

BUILDING AREAS -----

Room Number	Description	Number Dupli	er of icate Rm	Floor Area/Dupl Room (sqft)	Total Floor Area (sqft)	Partition Area (sqft)	Exposed Floor Area (sqft)	Skylight Area (sqft)	Sk1 /Rf (%)	Net Roof Area (sqft)	Window Area (sqft)	Win /Wl (%)	Net Wall Area (sqft)
				2,187	2,187	1,512	102	0	0	2,187	36	3	1,341
1	STORE-BARBER	1	1	2,167	2,187	1,512	102	0	0	2,187	36	3	1,341
Zone	1 Total/Ave.				2,187	1,512	102	0	0	2,187	36	3	1,341
System	1 Total/Ave.			3,420	3,420	4,122	100	0	0	3,420	94	7	1,256
2	ADMIN. OFFICES	1	1	3,420	3,420	4,122	100	0	0	3,420	94	7	1,256
Zone	2 Total/Ave.				3,420	4,122	100	0	0	3,420	94	7	1,256
System	2 Total/Ave.		_		1,200	1,638	68	0	0	1,200	198	22	720
3	COCKTAIL LOUNGE	1	1	1,200	1,200	1,638	68	0	0	1,200	198	22	720
Zone	3 Total/Ave.					1,638	68	0	0	1,200	198	22	720
System	3 Total/Ave.				1,200	3,213	119	0	0	2,444	108	7	1,498
4	BAR - GAME ROOM	1	1	2,444	2,444	4,500	0	0	0	7,015	0	0	0
5	BALL ROOM	1	1	7,015	7,015		40	0	0	1,840	192	36	348
6	DINING ROOM	1	1	1,840	1,840	2,349	135	0	0	3,147	18	1	1,791
7	KITCHER	1	1	3,147	3,147	3,645	294	0		14,445	318	8	3,637
Zone	4 Total/Ave	•			14,445			0		14,446	318	8	3,637
System	4 Total/Ave	•			14,446		294	0	_	21,253	647	9	6,954
Buildi	ng				21,253	20,979	564	U	U	21,233			-

ASHRAE 90 ANALYSIS - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

----- ASERAE 90 ANALYSIS-----

Overall Roof U-Value = 0.094 (Btu/Hr/Sq Ft/F)

Overall Wall U-Value = 0.221 (Btu/Hr/Sq Ft/F)

Overall Building U-Value = 0.127 (Btu/Hr/Sq Ft/F)

Roof Overall Thermal Transfer Value (OTTVr) = 7.09 (Btu/Hr/Sq Ft) Wall Overall Thermal Transfer Value (OTTVw) = 13.72 (Btu/Hr/Sq Ft)

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

Main System 1 SZ SINGLE ZONE

(D41) (M) (CLIII) (C)	
Design Cap. Hours Hours Capacity Hours Hours Cap. Hours Cap. Hours Hours Cap. Hours Hours Cap. Hours Hours Cap. Hours Hours Cap. Hour	0 0
(Rtub) (%) (Cfm) (%)	0 0
Load (Ton) (%)	•
70 A 138 89.3 0 0	0 0
0 - 5 0.2	
5 - 10 0.5 13 358 267.8 0 0 0.0	0 0
10 - 15 0.7 4 73 10 241 357.0 0 0 0.0	0 0
15 - 20 0.9 4 70 13712 10 327 446.3 0 0 0.0	0 0
20 - 25 1.2 4 63 -17,143 10 - 27,143 10 0 0.0	0 0
25 - 30 1.4 1 21 -20,3/2 5 2.0	0 0
30 - 35 1.6 4 61 -24,001 14 4/9	0 0
35 - 40 1.9 4 74 -27,430 7 248 71.0	0 0
40 - 45 2.1 5 87 -30,858 9 321 603.3	0 0
45 - 50 2.3 7 115 -34,287 8 284 692.3	0 0
50 - 55 2.5 7 118 -37,716 8 275 981.0	0 0
55 - 60 2.8 9 143 -41,144 0 0 1,071.0 0 0	0 0
55 3.0 5 88 -44,573 0 0 1,150.3 0 0 0.0	-
	0 0
51.420 0 0 1.338.8 0 0 0.0	0 0
70 73 1.428.0 0 0 0.0	0 0
73 - 80	0 0
80 - 85 3.9 4 55 55737 0 0 1.606.5 0 0 0.0	0 0
85 - 90 4.2 4 66	0 0
90 - 95 4.4 2 40 -05,145 - 0 1,785 0 100 8.760 0.0	0 0
95 - 100 4.6 5 80 -68,574	0 8,760
Hours Off 0.0 0 7,101 0 0 5,381 0.0 0 5	,

SINGLE ZONE Main System 2 SZ

_	Cool	T.	d	Heatin	ng Load		Cooling	Airflow		Heating	Airflow	
		-		Capacity	Hours		Cap.	Bours	Hours	Cap.	Hours	Hours
Design	Cap.	Hours	Hours	Capacity	Boulb	nourb	•			(Cfm)	(%)	
Load	(Ton)	(*)		(Btuh)	(%)		(Cfm)	(%)		,	(0)	
0 - 5	0.5	7	114	-20,290	31	826	174.0	0	0	0.0	U	Ū

5 - 10

10 - 15

15 - 20

20 - 25 25 - 30

30 - 35

35 - 40

40 - 45

70 - 75

75 - 80

80 - 85

85 - 90

90 - 95

95 - 100

Hours Off

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

Percent	Cool	ing Los	d	Heati	ng Load		Cooling	Airflow		Heating	Airflow	
		Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.	(%)	ношь	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(*)	80	-40,580	42	1,119	349.5	0	0	0.0	0	0
0 - 5	0.9		143	-60,870	27	710	524.3	0	0	0.0	0	0
5 - 10	1.4	B	73	-81,160	0	0	699.0	0	0	0.0	0	0
10 - 15	1.8	4	73	-101,450	0	0	873.8	0	0	0.0	0	0
15 - 20	2.3	4		-121,740	0	0	1,048.5	0	0	0.0	0	0
20 - 25	2.7	7	115	-142,030	0	. 0	1,223.3	0	0	0.0	0	0
25 - 30	3.2	6	106	-162,320	0	0	1,398.0	0	0	0.0	0	0
30 - 35	3.6	4	74	-182,610	0	0	1,572.8	0	0	0.0	0	0
35 - 40	4.1	10	166		0	0	1,747.5	0	0	0.0	0	0
40 - 45	4.5	8	143	-202,900	0	0	1,922.3	0	0	0.0	0	0
45 - 50	5.0	8	133	-223,190	0	0	2,097.0	0	0	0.0	0	0
50 - 55	5.4	9	156	-243,480			2,271.8	0	0	0.0	0	С
55 - 60	5.9	5	88	-263,770	0	0	2,446.5	0	0	0.0	0	0
60 - 65	6.3	8	132	-284,060	0	0	2,621.3	0	0	0.0	0	О
65 - 70	6.8	2	42	-304,350	0			0	0	0.0	0	0
70 - 75	7.3	1	20	-324,640	0		2,796.0			0.0	0	0
75 - 80	7.7	3	60	-344,930	0	0	2,970.8	0	0	0.0	0	0
80 - 85	8.2	0	0	-365,220	0	0	3,145.5	0	0		_	0
85 - 90	8.6	0	0	-385,510	0	0	3,320.3	0	0	0.0	0	
90 - 95	9.1	o	0	-405,800	0	0	3,495.0	100	8,760	0.0	0	0
95 - 100	0.0	0	7,038	0	0	6,105	0.0	0	0	0.0	0	8,760
Hours Off												

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

Main System 3 SZ SINGLE ZONE

					*****	. Tond		Cooling	Airflow		Heating	Airflow	
Perce	nt	Cool	-		Heatir		Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Desi	gn	Cap.	Hours	Hours	Capacity	Hours	Hours	(Cfm)	(*)		(Cfm)	(%)	
Lo	ad	(Ton)	(%)		(Btuh)	(*)		138.0	(5)	0	0.0	0	0
0 -	5	0.5	8	141	-5,687	14	446		0	0	0.0	0	0
5 -	10	0.9	5	92	-11,374	18	547	276.0	0	0	0.0	0	0
10 -	15	1.4	15	259	-17,061	13	415	414.0	=	-	0.0	0	0
15 -	20	1.9	17	292	-22,748	18	553	552.0	0	0	0.0	0	0
20 -	25	2.4	9	153	-28,435	12	363	690.0	0	0	0.0	0	0
25 -	30	2.8	14	245	-34,122	17	540	828.0	0	0		0	0
30 -	35	3.3	12	206	-39,809	8	245	966.0	0	0	0.0	0	0
35 -	40	3.8	13	222	-45,496	0	0	1,104.0	0	0	0.0		0
40 -	45	4.2	5	82	-51,183	0	0	1,242.0	0	0	0.0	0	0
45 -	50	4.7	2	42	-56,870	0	0	1,380.0	0	0	0.0	0	_
50 -	55	5.2	0	0	-62,557	0	0	1,518.0	0	0	0.0	0	0
55 -	60	5.7	0	0	-68,244	0	0	1,656.0	0	0	0.0	0	0
60 -	65	6.1	0	0	-73,931	0	0	1,794.0	0	0	0.0	0	0
65 -	70	6.6	0	_	-79,618	0	0	1,932.0	0	0	0.0	0	0
	75	7.1	0		-85,305	0	0	2,070.0	0	0	0.0	0	0
70 -		7.5	0		-90,992	0	0	2,208.0	0	0	0.0	0	0
75 -	80	8.0	0		-96,679	0	0	2,346.0	0	0	0.0	0	0
80 -	85		0		-102,366	0	0	2,484.0	0	0	0.0	0	0
85 -	90	8.5			-108,053	0		2,622.0	0	0	0.0	0	0
90 -		9.0	0		-113,740			2,760.0	100	8,760	0.0	0	0
95 -		9.4	0		•			0.0		. 0	0.0	0	8,760
Hour	s Off	0.0	0	7,026	0	U	3,031	0.0	-				

Main System 4 MZ MULTIZONE

	Cool	T	a	Heati	baoJ ne		Cooling	Airflow		Heating	Airflow	
Percent		•		Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.		Bours			Hours	(Cfm)	(%)		(Cfm)	(%)	
Load	(Ton)	(\$)		(Btuh)	(%)		1,039.0	0	0	0.0	0	0
0 - 5	4.0	41	1,314	-30,243	1	60	1,039.0	·	•			
5 - 10												

10 - 15

15 - 20 20 - 25

25 - 30

50 - 55

55 - 60 60 - 65

65 - 70

70 - 75

75 - 80

80 - 85

85 - 90

90 - 95

95 - 100 Hours Off

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

	Cool	4 T		Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Percent			Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Design	Cap.	Hours	WOULD	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(*)	
Load	(Ton)	(%)	492	-60,486	17	745	2,078.0	0	0	0.0	0	0
0 - 5	8.0	15		-90,729	34	1,523	3,117.0	0	0	0.0	0	0
5 - 10	12.0	9	288	-	20	916	4,156.0	0	0	0.0	0	0
10 - 15	16.0	12	385	-120,972	14	624	5,195.0	0	0	0.0	0	0
15 - 20	20.0	11	338	-151,214	13	597	6,234.0	0	0	0.0	0	0
20 - 25	24.0	7	213	-181,457		. 14	7,273.0	0	О	0.0	0	0
25 - 30	28.0	6	186	-211,700	0		8,312.0	0	0	0.0	0	0
30 ~ 35	32.0	0	0	-241,943	0	0	9,351.0	0	0	0.0	0	0
35 - 40	36.0	0	0	-272,186	0	0	10,390.0	0	0	0.0	0	0
40 - 45	40.0	0	0	-302,429	0	0	11,429.0	0	0	0.0	0	0
45 - 50	44.0	0	0	-332,672	0	0	12,468.0	0	0	0.0	0	0
50 - 55	48.0	0	0	-362,915	0	0	•	0	0	0.0	0	0
55 - 60	52.0	0	0	-393,157	0	0	13,507.0	0	0	0.0	0	0
60 - 65	56.0	0	0	-423,400	0	0	14,546.0	0	0	0.0	0	0
65 - 70	60.0	0	0	-453,643	0		15,585.0	0	0	0.0	o	0
70 - 75	64.0	0	0	-483,886	0		16,524.0	0	0	0.0	0	0
75 - 8 0	68.0	0	0	-514,129	0		17,563.0		0	0.0	0	0
80 - 85	72.0	0	0	-544,372	0	0	18,702.0	0		0.0	0	
85 ~ 90	76.0	0	0	-574,615	0	0	19,741.0	0	0	0.0	0	
90 - 95	80.0	0	0	-604,858	0	0	20,780.0	100	•		0	-
95 - 100	0.0	0	5,544	0	C	4,281	0.0	0	0	0.0	U	5,700
Hours Off												

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
BLDG 4109 BASERUN FT LEONARD WOOD

System Totals

		Cool	4na 100	d	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Percei			Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Desig	•	Cap.		HOULE	(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
Lo	ad	(Ton)	(*)		(Bean)	(-,	•	•					
0 -	5	5.2	44	1,405	-59,649	16	695	1,441.0	0	0	0.0	0	0
-		10.3	8	273	-119,297	33	1,490	2,882.0	0	0	0.0	0	0
5 -	10	15.5	9	281	-178,946	22	986	4,323.0	0	0	0.0	0	0
10 -	15	20.6	10	326	-238,594	12	537	5,764.0	0	0	0.0	0	0
15 -	20	25.8	8	260	-298,243	17	755	7,205.0	0	0	0.0	0	0
20 -	25		6	191	-357,892	0	16	8,646.0	0	0	0.0	0	0
25 -	30	30.9	9	305	-417,540	0	0	10,087.0	0	0	0.0	0	0
30 -	35	36.1	4	115	-477,189	0	0	11,528.0	0	0	0.0	0	0
35 -	40	41.2	_	60	-536,837	0	0	12,969.0	0	0	0.0	0	0
40 -	45	46.4	2		-596,486	0	0	14,410.0	0	0	0.0	0	0
45 -	50	51.6	0	0	-656,135	0		15,851.0	0	0	0.0	0	0
50 -	55	56.7	0		-715,783	0		17,292.0	0	0	0.0	0	0
55 -	60	61.9	0		•	0		18,733.0	0	0	0.0	0	0
60 -	65	67.0	0		-775,432	0	_	20,174.0	0	0	0.0	0	0
65 -	70	72.2	0		-835,080		_	21,615.0	0		0.0	0	0
70 -	75	77.3	0		-894,729	0		23,056.0	0		0.0	0	0
75 -	80	82.5	0		-954,378	0		24,497.0	0		0.0	0	0
80 -	85	87.6	0	0	-1,014,026	0			0		0.0	0	0
85 -	90	92.8	0	0	-1,073,675	0		25,938.0	_		0.0	0	
90 -	95	98.0	0	0	-1,133,323	O		27,379.0	0		0.0	0	_
95 -	100	103.1	C	0	-1,192,972	C		28,820.0		•		0	
Hour	s Off	0.0	c	5,544	0	C	4,281	0.0	C	0	0.0	U	6,780

					Weekda	v	Satu	rday	Sunda	my	Monda	у
Januar	_		Desi	=	Htg Btuh		Htg Btuh		Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
Hour	OADB		Htg Btuh	0.0	-259,849	0.0	-273,158	0.0	-272,818	0.0	-265,552	0.0
1	24.1		-299,610	0.0	-284,890	0.0	-286,894	0.0	-286,562	0.0	-284,102	0.0
2	23.4		-325,976	0.0	-286,568	0.0	-288,573	0.0	-288,248	0.0	-285,794	0.0
3	23.7	20.0	-340,042		-285,044	0.0	-295,789	0.0	-295,136	0.0	-292,686	0.0
4	24.7		-350,392	0.0	-278,127	0.0	-295,471	0.0	-295,141	0.0	-292,695	0.0
5	26.3		-358,314	0.0	-279,957	0.0	-284,570	0.0	-284,248	0.0	-281,807	0.0
6	28.3		-355,756	0.0		ó.o	-264,461	0.0	-264,147	0.0	-261,710	0.0
7	30.8		-347,175	0.0	-261,075	0.0	-260,718	0.0	-260,350	0.0	-243,762	0.0
8	33.5		-304,503	0.0	-229,143 -196,592	0.0	-231,204	0.0	-230,908	0.0	-206,935	0.0
9	36.4		-246,902	0.0		0.0	-208,853	0.0	-208,564	0.0	-178,691	0.0
10	39.3	35.6	-196,712	0.0	-176,692	0.0	-171,371	0.0	-171,089	0.0	-135,319	0.0
11		36.8	-131,815		-136,264	0.0	-144,168	0.0	-143,893	0.0	-109,279	0.0
12	44.6	37.5	-89,070	0.0	-110,201	0.0	-116,224	0.0	-115,956	0.0	-84,559	0.0
13	46.6	38.2	-66,961	0.0	-85,456	0.0	-99,040	0.0	-98,778	0.0	-71,144	0.0
14	48.2	38.3	-56,154	0.0	-72,022		-93,758	0.0	-93,502	0.0	-66,840	0.0
15	49.2	39.0	-54,586	0.0	-67,699	0.0		0.0	-91,873	0.0	-65,198	0.0
16	49.5	39.1	-57,824	0.0	-66,035	0.0	-92,122	0.0	-97,252	0.0	-70,582	0.0
17	48.8	38.9	-64,296	0.0	-71,398	0.0	-97,495	0.0	-108,712	0.0	-79,499	0.0
18	47.0	38.5	-72,714	0.0	-80,293	0.0	-108,949		-124,378	0.0	-91,595	0.0
19	44.1	37.3	-82,254	0.0	-92,371	0.0	-124,610	0.0	-144,295	0.0	-107,688	0.0
20	40.5	34.8	-101,512	0.0	-108,446	0.0	-144,521	0.0	-170,438	0.0	-127,512	0.0
21	36.4	31.2	-124,134	0.0	-128,253	0.0	-170,659	0.0	-194,655	0.0	-166,213	0.0
22	32.4	27.7	-144,779	0.0	-166,935	0.0	-194,870	0.0	-220,539		-203,710	0.0
23	28.8	24.3	-195,064	0.0	-204,414	0.0	-220,749		-248,452		-236,870	0.0
24	25.9	21.7	-214,539	0.0	-237,557	0.0	-248,657	0.0	-248,432	•••	222,	
									Sun	dav	Mone	lay
Febru	ary		Des		Week			urday		Clg Ton		Clg Ton
Hour	OADB	CAWB	-	Clg Ton	-	Clg Ton		Clg Ton	-229,357		-222,088	0.0
1	31.5	28.3	-239,617		-208,479	0.0	-229,345		-242,618		-240,156	0.0
2	29.8	26.8	-256,475		-239,303	0.0	-242,616		-254,387		-251,930	0.0
3	28.3	25.5	-266,128		-252,315	0.0	-254,394		-265,092		-262,639	0.0
4	27.1	24.4	-285,809		-263,031	0.0	-265,107		-281,693		-279,244	0.0
5	26.2	23.6	-291,358	0.0	-270,261	0.0	-282,316		-291,190		-288,745	0.0
6	25.6	23.5	-291,851	0.0	-275,786		-291,255		-289,878		-287,439	0.0
7	25.5	23.4	-287,004	0.0	-286,326		-289,949		-280,903		-262,586	0.0
8	26.2	24.4	-276,275	0.0	-261,758		-280,977		-266,875		-242,315	
9	28.3	26.1	-225,010	0.0	-236,253		-263,020		-249,332		-219,494	
10	31.5	28.7	-184,319		-207,773		-249,625		-206,956		-171,902	
11	35.2	31.3	-125,320		-171,398		-207,242		-172,03		-137,888	
12	39.0	33.9	-97,21		-138,176		-172,314				-109,268	0.0
13	42.2	2 35.9	-79,40		-109,562		-139,70				-87,841	
14	44.3	36.9	-71,88		-88,147		-117,82			_	-85,390	
15	45.0	36.8	-70,72	9 0.0	-85,707		-112,43				-87,458	
16	44.6	36.3	-73,75		-87,778		-115,34				-91,024	
17	44.3	35.8	-78,32		-91,350		-121,37				-97,088	
16	43.4	4 35.6	-84,77		-97,416		-130,06				-101,81	
19	42.	2 36.1	-91,35		-102,149		-137,31				-108,792	
20	40.	7 35.9	-109,67		-109,129		-147,23				-130,123	
21	39.	0 34.5	-134,82		-130,463		-159,62				-143,390	
22	37.	1 33.2	2 -146,57	9 0.0	-143,73		-172,07				-170,96	
23	35.	2 31.5	-193,16	0.0	-171,309		-188,03				-195,74	
24	33.	3 29.9	9 -211,37	8 0.0	-197,09	1 0.0	-208,52	0 0.0	-208,31		220,74	

0.0

							Satur	day	Sunday	,	Monday	7
March			Desig		Weekda		Htg Btuh		Htg Btuh		Htg Btuh (lg Ton
Hour	OADB	OAWB	Htg Btuh		Htg Btuh -121,895	0.0	-136,216	0.0	-163,938	0.0	-156,975	0.0
1	40.0	36.8	-198,213	0.0		0.0	-173,957	0.0	-183,034	0.0	-180,870	0.0
2	37.3		-216,561	0.0	-151,064	0.0	-195,840	0.0	-196,004	0.0	-193,837	0.0
3	34.9		-228,124	0.0	-178,717	0.0	-207,653	0.0	-207,813	0.0	-205,643	0.0
4	32.9	30.3	-238,167	0.0	-206,883	0.0	-237,286	0.0	-237,474	0.0	-235,333	0.0
5	31.4	28.8	-252,625	0.0	-219,697		-247,724	0.0	-247,881	0.0	-245,710	0.0
6	30.4	28.0	-253,328	0.0	-230,611	0.0	-249,539	0.0	-249,692	0.0	-247,460	0.0
7	30.1	27.6	-241,697	0.0	-247,053	0.0	-243,589	0.0	-243,739	0.0	-225,373	0.0
8	30.7	28.0	-201,033	0.0	-224,970	0.0	-229,428	0.0	-229,575	0.0	-205,450	0.0
9		28.9	-160,443	0.0	-205,051 -176,979	0.0 0.0	-206,335	0.0	-206,479	0.0	-177,374	0.0
10	35.4	30.6	-108,573	0.0	-1/6,9/9	0.0	-175,546	0.0	-175,688	0.0	-141,224	0.0
11	38.9	32.6	-73,617	0.0	•	0.0	-142,873	0.0	-143,011	0.0	-110,866	0.0
12		35.4	-56,011	0.0	-110,481 -82,097	0.0	-107,738	0.0	-107,874	0.0	-82,479	0.0
13		38.5	-46,283	0.0	-63,627	0.0	-85,747	0.0	-85,880	0.0	-64,002	0.0
14		41.3	-40,110	0.0	-55,649	0.0	-70,217	0.0	-70,323	0.0	-55,747	0.0
15		43.6	-38,584	0.0	-51,504	0.0	-63,014	0.0	-63,123	0.0	-51,637	0.0
16		45.1	-42,598		-49,833	0.0	-61,064	0.0	-61,175	0.0	-49,996	0.0
17		45.4	-49,275	0.0	-49,963	0.0	-63,727	0.0	-63,839	0.0	-50,150	0.0
18	55.3	45.9	-58,252	0.0	-51,375	0.0	-69,782	0.0	-69,895	0.0	-51,581	0.0
19		46.1	-68,062	0.0	-51,375	0.0	-75,574	0.0	-75,688	0.0	-55,110	0.0
20	52.8	46.3	-77,944	0.0	-60,759	0.0	-86,397	0.0	-86,508	0.0	-61,056	0.0
21	50.8	45.5	-86,596	0.0	-68,908	0.0	-101,646	0.0	-101,755	0.0	-69,202	0.0
22		43.7	-94,959	0.0	-89,498	0.0	-125,935	0.0	-126,042	0.0	-89,788	0.0
23		41.6	-101,153	0.0	~114,310	0.0	-144,742	0.0	-144,847	0.0	-114,597	0.0
24	42.9	39.2	-123,275	0.0	124,010							
											Monda	av
April			Des:	ign	Weekd	ay	Satu	rday	Sund	ay	Hond	-1
April Hour		OAWB		ign Clg Ton	Weekd Htg Btuh	-	Satu Htg Btuh		Htg Btuh	-	Etg Btuh	Clg Ton
Bour	OADB			•		-				-		Clg Ton
Hour 1	OADB 56.3	50.9	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	0.0 0.0
Hour 1 2	OADB 56.3 54.2	50.9 48.9	Htg Btuh -67,105 -72,801	Clg Ton	Htg Btuh -49,338	Clg Ton	Htg Btuh -49,851	Clg Ton	Htg Btuh -49,869	Clg Ton	Htg Btuh -49,833	0.0 0.0 0.0
Hour 1 2	OADB 56.3 54.2 52.3	50.9 48.9 47.7	Htg Htuh -67,105	Clg Ton 0.0 0.0	Htg Btuh -49,338 -59,032	Clg Ton 0.0 0.0	Htg Btuh -49,851 -59,393	Clg Ton 0.0 0.0	Htg Btuh -49,869 -59,379	0.0 0.0	Etg Btuh -49,833 -59,336	Clg Ton 0.0 0.0 0.0 0.0
Hour 1 2	OADB 56.3 54.2 52.3	50.9 48.9 47.7 46.4	Htg Htuh -67,105 -72,801 -82,330	Clg Ton 0.0 0.0	Htg Btuh -49,338 -59,032 -67,617	Clg Ton 0.0 0.0	Htg Btuh -49,851 -59,393 -66,846	Clg Ton 0.0 0.0 0.0	Htg Btuh -49,869 -59,379 -66,589	Clg Ton 0.0 0.0 0.0	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078	Clg Ton
Hour 1 2 3	OADB 56.3 54.2 52.3 50.7	50.9 48.9 47.7 46.4 45.4	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -49,338 -59,032 -67,617 -72,288	Clg Ton 0.0 0.0 0.0	Htg Btuh -49,851 -59,393 -66,846 -71,529	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -49,869 -59,379 -66,589 -71,277	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027	Clg Ton
Hour 1 2 3 4 5	OADB 56.3 54.2 52.3 50.7 49.5	50.9 48.9 47.7 46.4 45.4	Htg Btuh -67,105 -72,801 -82,330 -97,358	Clg Ton 0.0 0.0 0.0 0.0 0.0	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485	Clg Ton 0.0 0.0 0.0 0.0	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0
Hour 1 2 3 4 5	OADB 56.3 54.2 52.3 50.7 49.5 48.8	50.9 48.9 47.7 46.4 45.4	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321	Clg Ton
Hour 1 2 3 4 5 6 7	OADB 56.3 54.2 52.3 50.7 49.5 48.8	50.9 48.9 47.7 46.4 45.4 44.7 44.7	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825	Clg Ton
Hour 1 2 3 4 5 6 7 8	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.5	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626	Clg Ton
Hour 1 2 3 4 5 6 7 8	OADB 56.3 54.2 52.3 50.7 49.5 48.8 49.2 51.2	50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 44.6	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660	Clg Ton 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121	Clg Ton
Bour 1 2 3 4 5 6 7 8 9 10	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 49.2 51.2	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.5 44.6 46.1	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585	Clg Ton
Hour 1 2 3 4 5 6 7 8 9 10 11	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 51.2 57.8 61.8	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.5 44.6 46.1	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585	Clg Ton
Hour 1 2 3 4 5 6 7 8 9 10 11 12	OADB 56.3 54.2 52.3 50.7 49.5 48.6 48.5 51.2 57.6 61.6 65.4	50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 46.1 48.8 51.6	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0	Clg Ton
Bour 1 2 3 3 4 5 6 7 8 9 10 11 12 13	OADB 56.3 54.2 52.3 50.7 49.5 48.6 48.5 51.2 57.8 61.8 65.4	50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 46.1 48.8 51.6 54.4	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0	Clg Ton
Bour 1 2 3 3 4 4 5 6 6 7 8 9 10 11 12 13 14	OADB 56.3 54.2 52.3 50.7 49.5 48.6 49.2 51.2 57.6 61.6 68.4	50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 46.1 48.8 51.6 54.4 55.7	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0	Clg Ton
Bour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 51.2 57.6 61.8 65.4 70.4	50.9 48.9 47.7 46.4 45.4 44.7 44.5 44.6 46.1 48.8 51.6 48.8 51.6 54.4 56.7 58.3	Htg Htuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0	Clg Ton
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 51.2 57.6 61.6 65.4 70.4 70.6	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.6 46.1 48.8 51.6 54.4 55.4 56.7 58.3	Htg Htuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0 0	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0 0	Clg Ton
Bour 1 2 3 3 4 4 5 5 6 7 8 9 10 11 12 13 14 15 16 17	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 51.2 57.6 65.4 70.4 70.4 70.6	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.6 46.1 48.8 51.6 54.4 55.7 58.3 58.3 58.2	Htg Htuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0 0 0	Clg Ton
Bour 1 2 3 3 4 4 5 5 6 7 8 9 10 11 12 13 14 15 16 17 18	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 57.6 61.6 65.4 70.4 70.6 68.9	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.5 44.6 51.6 51.6 51.6 51.6 51.6 51.6 51.6 51	Htg Htuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0 0 0 0 0	Clg Ton	Etg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0 0 0 0 0	Clg Ton
Bour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 51.2 57.6 65.4 70.4 70.6 68.9	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.6 46.1 48.8 51.6 54.4 55.7 58.3 58.2 58.2 58.2 9 58.3	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0 0 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0 0 0 0 0 0	Clg Ton	Etg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0 0 0 0 0 0	Clg Ton
Bour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 57.6 61.8 65.4 70.4 70.6 68.9 67.6 65.6	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.6 46.1 51.6 51.6 51.6 51.6 51.6 51.6 51.6 5	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0 0 0 0 0 0 0 0	Clg Ton	Etg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0 0 0 0 0 0 0 0	Clg Ton
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	OADB 56.3 54.2 52.3 50.7 49.5 48.8 48.5 57.6 61.8 65.4 70.4 70.6 68.9 67.6 65.6	50.9 48.9 47.7 46.4 45.4 44.7 44.7 44.6 46.1 51.6 51.6 51.6 51.6 51.6 51.6 51.6 5	Htg Btuh -67,105 -72,801 -82,330 -97,358 -99,564 -99,902 -77,780 -54,526 -42,660 -34,903	Clg Ton	Htg Btuh -49,338 -59,032 -67,617 -72,288 -75,576 -77,790 -79,069 -83,467 -73,570 -60,553 -49,041 -5,862 0 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,851 -59,393 -66,846 -71,529 -74,840 -80,885 -90,190 -85,561 -73,749 -59,764 -49,345 -10,239 0 0 0 0 0 0 0 0	Clg Ton	Htg Btuh -49,869 -59,379 -66,589 -71,277 -86,485 -93,941 -120,809 -115,695 -95,431 -71,863 -53,182 -11,422 0 0 0 0 0 0 0 0 0	Clg Ton	Etg Btuh -49,833 -59,336 -66,490 -71,181 -85,078 -102,027 -105,927 -91,321 -73,825 -59,626 -49,121 -11,585 0 0 0 0 0 0 0 0 0	Clg Ton

-25,962

0.0

-23,322

-50,233

58.6 53.0

0.0

0.0

-26,715

0.0

-26,998

222			FI DECKARD .				Satu	rdev	Sunc	lav	Monday	,
May			Desig	•	Weekd		Htg Btuh		Htg Btuh		Htg Btuh (lg Ton
Hour	OADB	OAWB	Htg Btuh		Htg Btuh		arg scun	1.8	0	1.8	0	1.8
1	63.3	59.6	0	21.7	0	1.7	0	1.6	0	1.6	0	1.6
2	61.3	57.9	0	6.6	0	1.6	0	1.4	o	1.4	0	1.4
3	59.7	56.5	0	1.5	0	1.4	0	1.3	0	1.3	0	1.3
4	58.4	55.5	0	1.5	0	1.3	0	0.0	0	0.0	0	0.0
5	57.6	54.8	0	1.4	0	1.3	0	0.0	0	0.0	0	0.0
6	57.4	54.7	0	1.4	0	0.0	0	0.0	0	0.0	0	0.0
7	57.9	55.2	0	0.0	0	ó.o	0		0	0.0	0	0.0
8	59.4	55.6	0	0.0	0	0.0	0		0	0.0	0	0.0
9	61.7	56.5	0	0.7	0	0.0	0	_	0	0.0	0	0.0
10	64.6	57.7	0	1.9	0		0		o	0.0	0	0.0
11	67.8	59.7	0	7.3	0		0		c	2.2	0	2.2
12	71.0	62.0	0	17.9	0		0		c	3.9	0	7.9
13	73.9	63.9	0	27.1	0		C		c		0	13.8
14	76.3	65.3	0	30.7	0		(C	8.5	o	15.2
15	77.7	66.4	0	32.1	0					13.0	0	20.0
16	78.2	66.4	0	30.1	o		(17.3	0	22.5
17	78.0	66.3	0	29.9	C		(18.1	o	22.2
18	77.2	66.2	0	27.3	c			18.3		17.8	0	20.5
19	76.0	66.5	0	23.4	c	20.5		17.7		0 15.2	0	18.2
20	74.3	66.4	0	18.6	C	18.2		15.2		0 11.0	0	14.2
21	72.3	66.5	0	13.1	C	14.2		11.0			0	7.3
22	70.1	64.9	0	5.9	(7.3		5.8		_	0	3.1
23	67.8	63.2	0	2.3	(3.1		2.7			0	1.9
24	65.5	61.4	0	1.7	(1.9		0 1.9		0 1.9	•	
								turday	511	nday	Mond	ау
June			Des	-		day		h Clg Tor		h Clg Ton	Htg Btuh	
Hour	OADB	OAWB	-	Clg Ton	-	n Clg Ton	•	0 2.1	-	0 2.1	0	2.1
1	66.2	65.3	0			2.2		0 2.1		0 2.1	0	2.1
2		63.9	0					0 1.9		0 1.9	0	1.9
3		62.4	o					0 1.6		0 1.8	0	1.8
4	64.0	61.3	C			0 1.9		0 1.		0 1.7	0	1.7
5		60.8	ď			0 1.9		0 0.0		0.0	o	0.0
6		61.2	c			0 0.0		0 0.0		0 0.0	0	0.0
7		61.7	c					0 0.1		0 0.0	0	0.0
8		62.3	ď			0 0.5		0 0.1		0 0.0	0	0.0
9	69.3	63.3		2.9		0 3.1		0 1.		0 1.6	0	1.6
10		65.2		17.3		0 13.6		0 6.		0 6.8	0	12.0
11		4 67.5		0 27.5				0 13.		0 13.6	0	22.5
12		4 69.8		0 36.2		0 24.1		0 22.		0 21.8	0	30.9
13		7 71.6		0 40.6		0 33.6		0 29.		0 29.4	0	33.6
14		2 72.7		0 42.7				0 30.		0 31.0	0	34.3
15		8 72.8		0 43.7		0 34.3		0 29.		0 29.8	0	33.6
16		2 73.1		0 42.9		0 34.1		0 30.		0 30.6	0	34.0
17		9 72.7		0 42.8		0 31.7		0 28.		0 28.5	0	31.7
18		8 71.6		0 39.5		0 27.6		0 24.		0 24.4	0	27.6
19		3 71.3		0 35.9		0 23.1		0 19.		0 19.7	0	23.1
			١	0 29.9	,					0 14.2	0	17.8
20		8 72.0				0 17 9	ı	0 14.	. 2	0 14.2	v	
21	71.	8 71.8	3	0 23.9		0 17.8		0 14.		0 7.7		
21 22	71. 69.	8 71.8 9 71.0	3	0 23.9)	0 9.7	,	0 7.	.7		o	9.7
21	71. 69. 68.	8 71.8	3)	0 23.9) 5		, ;	0 7.	.7	0 7.7	o o	9.7

					Weekd	***	Satur	dav	Sund	зу	Mond	ay
July			Desi	=	Htg Btuh		Htg Btuh	-	Htg Btuh		Htg Btuh	Clg Ton
Bour	OADB		Htg Btuh O	5.4	neg nean	4.8	0	4.0	0	3.9	0	4.0
1		71.0	0	4.6	0	3.5	0	2.9	0	2.9	0	2.9
2	69.8		0	3.3	0	2.7	0	2.4	0	2.4	0	2.4
3	68.9		0	2.8	0	2.4	0	2.4	0	2.4	0	2.4
4		65.9		2.7	0	2.4	0	2.4	0	2.4	0	2.4
5		65.2	0		0	2.4	0	2.4	0	2.4	0	2.4
6		64.9	0	2.1	0	2.6	0	2.1	0	1.9	0	1.9
7		65.3	0	0.0	0	3.6	0	2.1	0	2.1	0	2.1
8		65.6	0	10.8	0	7.7	0	4.5	0	4.6	0	6.0
9		65.7	0	21.1	0	20.0	0	11.6	0	11.6	0	20.1
10		66.5	0	26.8 34.8	0	26.5	0	18.8	0	18.7	0	26.2
11		67.9	0		0	33.9	0	31.0	0	31.0	0	33.9
12		69.9	0	42.7 47.2	0	40.4	o	37.0	0	37.0	0	40.3
13		71.3	0		0	41.0	0	37.6	0	37.6	0	40.9
14		72.5	0		0		0	38.8	0	38.8	0	42.0
15		73.9	_		0		0	38.5	0	38.5	0	41.8
16		75.3	0		0		О	38.0	0	38.0	0	41.4
17		75.5	0		0		0	34.7	0	34.7	0	37.9
18			0		0		0	31.3	0	31.3	0	34.2
19		76.7 78.6	0		0		0	26.9	0	26.9	0	30.0
20		78.8	0		0		0	21.6	0	21.6	0	24.8
21		78.0	C		o		0	14.9	o	14.9	o	16.9
22 23		75.4			o		0	9.4	0	9.4	o	
24		73.0	,		c	6.8	0	5.9	0	5.9	C	6.7
~ 4												
Augus	it		Des	sign	Week	day	Sati	_	Sun		Mor	-
Augus Hour		S OAWB		sign		day		irday Clg Ton	Htg Btuh	Clg Ton	Htg Btul	Clg Ton
			Htg Btul	-		Clg Ton		Clg Ton 2.1	Htg Btuh	Clg Ton	Htg Btul	Clg Ton
Hour	OADB		Htg Btul	clg Ton	Htg Btul	Clg Ton	Htg Btuh	Clg Ton 2.1 2.0	Htg Btuh C	Clg Ton 2.1 2.0	Htg Btul (Clg Ton 2.1 2.0
Hour 1	OADB 68.0	65.3	Btg Btul	Clg Ton	Htg Btul	Clg Ton 2.5 2.0	Htg Btuh O	Clg Ton 2.1 2.0 1.8	Htg Btuh C C	Clg Ton 2.1 2.0 1.8	Htg Btul ((Clg Ton 2.1 2.0 1.8
Hour 1 2	68.0 67.0 66.2	65.3	Htg Btul (Clg Ton 3.7 2.7	Htg Btul ((Clg Ton 2.5 2.0	Htg Btuh O O	Clg Ton 2.1 2.0 1.8 1.7	Htg Btuh C C C	Clg Ton 2.1 2.0 1.8 1.7	Htg Btuh (((Clg Ton 2.1 2.0 1.8 1.7
Hour 1 2	68.0 67.0 66.2 65.6	65.3 63.5 62.2	Htg Btul	Clg Ton 3.7 2.7 2.2	Htg Btul (((Clg Ton 2.5 2.0 1.9	Htg Btuh O O O O	Clg Ton 2.1 2.0 1.8 1.7	Htg Btuh C C C C	Clg Ton 2.1 2.0 1.8 1.7	Htg Btul (((Clg Ton 2.1 2.0 1.8 1.7 1.7
Hour 1 2 3	68.0 67.0 66.2 65.6	65.3 63.5 62.2 61.1	Htg Btul	Clg Ton 3.7 2.7 2.2 2.0 2.0	Htg Btul (((Clg Ton 2.5 2.0 1.9 1.8	Htg Btuh 0 0 0 0 0 0	2.1 2.0 1.8 1.7 1.7	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0	Htg Btul (((Clg Ton 2.1 2.0 1.8 1.7 0.00
Hour 1 2 3 4 5	68.0 67.0 66.2 65.6 65.4	65.3 63.5 62.2 61.1 60.7	Btg Btul	Clg Ton 3.7 2.7 2.2 2.0 2.0	Htg Btuh	Clg Ton 2.5 2.0 1.9 1.8 1.7	Htg Btuh O O O O	2.1 2.0 1.8 1.7 1.7 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0
Hour 1 2 3 4 5	OADB 68.0 67.0 66.2 65.6 65.4 65.6	65.3 63.5 62.2 62.2 61.1 60.7	Btg Btul	Clg Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1	Htg Btuh	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8	Htg Btuh 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 2.0 1.8 1.7 0.0 0.0 0.0
Hour 1 2 3 4 5 6 7	OADB 68.0 67.0 66.2 65.4 65.4 66.8	65.3 63.5 62.2 62.2 61.1 60.7 8 60.7	Btg Btul	Clg Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 1.6	Htg Btuh	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 1.3 0.7 1.1	Htg Btuh 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0
Hour 1 2 3 4 5 6 7	OADB 68.0 67.0 66.2 65.6 65.4 65.8 66.8	65.3 63.5 62.2 62.2 61.1 60.7 60.7 61.2 61.6	Btg Btul	Clg Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0.1.6 0.2.1 0.6.3 0.20.6	Htg Btuh	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.0 4.1	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 4 5 6 7 8 9	OADB 68.0 67.0 66.2 65.4 65.8 66.8 71.2	65.3 63.5 62.2 661.1 60.7 60.7 61.2 61.6 62.5	Btg Btul	Cly Ton 3.7 2.7 2.2 3.0 2.0 2.0 2.0 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1	Htg Btuh	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.0 4.1 7.8	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 14.2
Bour 1 2 3 4 5 6 7 8 9 10	OADB 68.0 67.0 66.2 65.4 65.6 66.8 71.2 74.3	65.3 63.5 62.2 661.1 60.7 60.7 8 61.2 61.6 62.5 63.6	Btg Btul	Clg Ton 3.7 2.7 2.2 0.2.0 0.2.0 0.2.1 0.1.6 0.2.1 0.6.3 0.20.6 0.25.9 0.33.4	Htg Btuh	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.0 4.1 7.8 15.5	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.1 0.14.2 0.22.9
Hour 1 2 3 4 5 5 6 6 7 8 9 10 11	68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 74.3	65.3 63.5 62.2 61.1 60.7 61.2 61.6 61.2 62.5 63.6 65.1 96.8	Btg Btul	1 Clg Ton 3.7 2.7 2.2 0 2.0 0 2.0 0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 38.1	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.0 4.1 7.8 15.5 22.5	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.1 14.2 0.22.9 0.29.4
Hour 1 2 3 3 4 5 5 6 6 7 9 10 11 12	68.0 67.0 66.2 65.6 65.4 65.8 68.6 71.2 74.3	65.3 63.5 62.2 661.1 60.7 61.2 61.6 61.2 62.5 63.6 63.6 65.1 96.8	Btg Btul	Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0.1.6 0.2.1 0.6.3 0.20.6 0.25.9 0.33.4 0.38.1	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.0 4.1 7.8 15.5 22.5 27.8	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 14.2 0.22.9 0.29.4 0.31.2
Bour 1 2 3 3 4 5 5 6 7 8 9 10 11 12 13	OADB 68.0 67.0 66.2 65.4 65.6 68.6 71.2 74 77.8 83 85	65.3 63.5 63.5 62.2 5 61.1 4 60.7 8 61.2 5 61.6 62.5 63.6 7 65.1 9 66.8 4 68.2 0 69.7 6 70.7	Btg Btul	Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0.1.6 0.2.1 0.6.3 0.25.9 0.33.4 0.38.1 0.40.4	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.0 4.1 7.8 15.5 22.5 27.8 28.7	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Bour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1	65.3 63.5 62.2 61.1 60.7 61.2 61.6 61.2 62.5 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5	Btg Btul	1 Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.7 0.7 0.1.1 0.7 0.7	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Bour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1 85.1 85.1	65.3 63.5 62.2 61.1 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4	Btg Btul	1 Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 3 4 4 5 5 6 6 7 7 8 9 10 11 12 13 14 15 16 17 18	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1 85.1 85.1	65.3 63.5 63.5 62.2 61.1 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7	Btg Btul	1 Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3 0 35.9	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.23.8 0.29.7 0.31.2 0.31.4 0.31.4	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2 26.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1 85.1 85.1 878.1	65.3 63.5 62.2 61.1 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7	Btg Btul	1 Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3 0 35.9 0 32.2	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2 26.0 21.9	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.9 83.0 85.0 85.0 85.0 87.0 87.0	65.3 63.5 63.5 62.2 61.1 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7 770.7	Btg Btul	1 Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3 0 35.9 0 32.2 0 28.3	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2 26.0 21.9 0 18.4	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1 85.1 85.1 87.2 77.3	65.3 63.5 63.5 62.2 61.1 60.7 61.2 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7 770.7 171.5 972.4	Btg Btul	1 Cly Ton 3.7 2.7 2.2 0 2.0 0 2.0 0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3 0 35.9 0 32.2 0 28.3	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2 26.0 21.9 18.4 0 13.9	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1 85.1 85.1 87.2 77.3	65.3 63.5 63.5 62.2 61.1 60.7 61.2 61.6 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7 770.7 171.5 972.4 871.5	Btg Btul	1 Cly Ton 3.7 2.7 2.2 2.0 2.0 2.0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3 0 35.9 0 32.2 0 28.3 0 22.5	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 1.3 0.7 1.10 5.0 14.5 0.23.8 0.29.7 0.31.2 0.31.4 0.29.0 0.24.8 0.21.5 0.29.8	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2 26.0 21.9 21.9 21.9 27.8	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	OADB 68.0 67.0 66.2 65.6 65.4 65.6 68.6 71.2 77.1 80.1 83.1 85.1 85.1 87.2 77.2 87.3 87.3	65.3 63.5 63.5 62.2 61.1 60.7 61.2 61.6 62.5 63.6 765.1 966.8 468.2 069.7 070.5 670.4 370.7 770.7 171.5 972.4	Btg Btul	1 Cly Ton 3.7 2.7 2.2 0 2.0 0 2.0 0 2.1 0 1.6 0 2.1 0 6.3 0 20.6 0 25.9 0 33.4 0 40.4 0 41.6 0 39.4 0 38.3 0 35.9 0 32.2 0 28.3	Htg Btul	Clg Ton 2.5 2.0 1.9 1.8 1.7 1.8 0.7 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.5 0.7 0.1.1 0.7 0.7 0.7 0.7 0.7 0	Htg Btuh 0 0 0 0 0 0 0 0 0 0 0 0 0	Clg Ton 2.1 2.0 1.8 1.7 1.7 0.0 0.0 0.6 4.1 7.8 15.5 22.5 27.8 28.7 28.0 28.2 26.0 21.9 18.4 0 13.9	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Htg Btuh	Clg Ton 2.1 2.0 1.8 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0

			Desig	n	Weekd	му	Batu	rday	Sund		Monday	
ptem			Htg Btuh		Hto Btuh		Htg Btuh	Clg Ton	Etg Btuh	Clg Ton	Htg Btuh	
ur	OADB		ncg scun 0	2.0	0	1.8	0	1.7	0	1.7	0	1.7
1		61.5	0	1.9	0	1.7	О	1.6	0	1.6	0	1.6
2	60.8	59.7			0	1.5	0	1.4	0	1.4	0	1.4
3	60.0		0	1.7	0	1.4	0	0.5	0	0.0	0	0.0
4	59.4		0	1.6	0	1.4	0	0.0	0	0.0	0	0.0
5		56.3	0	1.5	0	0.0	0	0.0	0	0.0	0	0.0
6	59.6	56.1	0	0.0		ó.o	0	0.0	0	0.0	0	0.0
7		56.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8	62.4	57.9	0	0.0	0		0	0.0	o	0.0	0	0.0
9		58.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.
10		59.6	0	0.5	0	0.0 1.3	0	0.8	o	0.8	0	0.0
11	71.6	61.1	o	5.8	0	4.9	0	4.4	0	4.4	0	4.
12	74.8	62.7	0	18.1	0		0	9.2	0	9.2	0	10.
13	77.2	64.6	0	25.8	0	12.6	0	10.6	o	10.6	0	15.
14	78.9	66.0	0	30.5	0	17.2	0	10.9	0	10.9	0	18.
15	79.5	67.1	0	31.6	0	20.0	0	15.0	0	15.0	0	22.
16	78.9	67.5	0	30.5	0	22.7	-	16.5	0	16.5	0	23.
17	77.4	67.9	0	30.5	0	23.2	0		0		0	20.
18	75.2	68.0	0	26.9	0	20.4	0	16.2	0		0	18.
19	72.6	69.3	0	23.6	0	18.3	0	14.5			0	14
20	69.9	70.0	0	19.6	0	14.4	0	11.1	0		0	9
21	67.7	69.0	0	14.5	0	9.9	0		0		0	3
22	65.7	67.3	0	6.6	0	3.1	0		0		0	1
23	64.0	65.4	o	2.9	0	1.9	0	1.9	0		0	1
24	62.8	63.6	0	2.0	0	1.8	0	1.8	O	1.8	J	•
ctob	mr		Desi	gn	Week	day	Sat	urday			Mond	
our	CADB	OAWB	Htg Btuh	=	Etg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	
1	50.7		-71,455	0.0	-68,606	0.0	-67,865	0.0	-77,591		-76,600	0
2	48.4		-75,012	0.0	-75,689	0.0	-74,981	0.0	-92,291		-88,783	0
3	46.3		-77,888	0.0	-82,048	0.0	-81,372	0.0	-114,691	0.0	-112,406	0
4	44.6		-88,968	0.0	-86,985	0.0	-89,163	0.0	-126,553	0.0	-124,269	C
		39.7	-99,152	0.0	-101,318		-106,562	0.0	-147,432	0.0	-145,149	(
5		39.1	-97,029	0.0	-110,011		-120,407	0.0	-151,87	0.0	-149,588	C
6			-91,774	0.0	-116,813		-131,616	0.0	-157,11	0.0	-140,674	(
7	42.3		-86,500	0.0	-113,714		-146,757	0.0	-148,98	0.0	-124,848	
8		39.8	-62,894	0.0	-96,130		-129,493	0.0	-129,42	0.0	-99,415	(
9	46.3		-42,155	0.0	-70,834		-97,781	0.0	-97,71	0.0	-70,259	(
10		43.0	-31,809	0.0	-50,48		-66,532		-66,46	5 0.0	-50,176	(
11		45.7	-31,809		-34,310		-38,482		-38,58	3 0.0	-34,733	+
12		2 49.1	0			0.0		0.0		0.0	0	(
13		5 52.3	0			0.0		0.0		0.0	0	
14		5 54.1				0.0		0.0		0.0	0	1
15		5 54.8	0			0 0.0		0.0		0.0	0	
16		3 54.0	0			0 0.0		0.0		0.0	0	
17		5 54.2	0			0 0.0		0 0.0		0.0	0	1
18		3 54.6	0			0.0		0 0.0		0.0	0	
19		6 55.9	0					0 0.0		0.0	0	
20		5 55.7	-6,499					0 0.0		0 0.0	0	
21		2 54.5	-41,345			0.0					-33,089	
22	58.	6 52.4	-53,535									
	56.	0 50.0	-63,462	0.0	-45,99	7 0.0	-45,88	. 0.0				
23	-			0.0	-58,18	5 0.0	-58,07	5 0.0	-58,05	0.0	-58,017	

									Sunday		Monday	
Novemi	ber		Desig		Weekda		Saturd	•	Htg Btuh C		Htg Btuh C	
Hour	OADB	OAWB	Htg Btuh		Htg Btuh		-109,619	0.0	-142,273	0.0	-134,873	0.0
1	43.8	40.3	-88,153	0.0	-91,814	0.0		0.0	-153,502	0.0	-150,912	0.0
2	42.0	38.9	-90,978	0.0	-126,268	0.0	-128,310	0.0	-163,141	0.0	-160,560	0.0
3	40.5	37.5	-102,953	0.0	-136,631	0.0	-144,359		-170,821	0.0	-168,249	0.0
4	39.4	36.3	-121,332	0.0	-158,964	0.0	-171,293	0.0	-176,694	0.0	-174,130	0.0
5	38.7	35.8	-140,850	0.0	-176,045	0.0	-177,155	0.0		0.0	-176,015	0.0
6	38.4	35.6	-156,468	0.0	-177,870	0.0	-179,020	0.0	-178,570	0.0	-178,928	0.0
7	39.1	36.3	-164,201	0.0	-174,888	0.0	-179,089	0.0	-180,536	0.0	-160,543	0.0
8	41.0	38.2	-136,633	0.0	-150,012	0.0	-170,208	0.0	-177,864		-135,561	0.0
9	43.8	40.6	-108,807	0.0	-136,270	0.0	-160,108	0.0	-159,769	0.0	-103,962	0.0
10			-72,837	0.0	-104,854	0.0	-134,140	0.0	-133,806	0.0		0.0
11		45.4	-55,542	0.0	-73,703	0.0	-102,766	0.0	-102,438	0.0	-72,817	0.0
12		47.5	-48,003	0.0	-55,652	0.0	-77,007	0.0	-76,266	0.0	-53,203	
13	57.4		-42,426	0.0	-48,797	0.0	-59,813	0.0	-59,118	0.0	-46,512	0.0
14	59.3		-18,194	0.0	-43,612	0.0	-47,342	0.0	-46,684	0.0	-41,455	0.0
	59.9		-4,457	0.0	-41,034	0.0	-43,692	0.0	-43,165	0.0	-39,524	0.0
15			-7,809	0.0	-40,928	0.0	-44,163	0.0	-43,654	0.0	-39,460	0.
16	59.7		-23,189	0.0	-42,058	0.0	-48,141	0.0	-47,648	0.0	-40,632	0.
17	59.0		-39,198	0.0	-43,726	0.0	-54,511	0.0	-54,034	0.0	-42,333	0.
18	57.9			0.0	-46,221	0.0	-60,772	0.0	-60,307	0.0	-44,848	٥.
19	56.4		-47,185 -56,677	0.0	-50,591	0.0	-69,054	0.0	-68,598	0.0	-49,237	0.
20	54.6			0.0	-57,041	0.0	-80,923	0.0	-80,547	0.0	-55,837	0.
21	52.5		-65,226		-64,447	0.0	-91,709	0.0	-91,345	0.0	-63,280	0.
22	50.3		-71,987	0.0	-71,839	0.0	-102,364	0.0	-102,010	0.0	-70,705	0.
23		44.0	-77,452			0.0	-116,902	0.0	-116,558	0.0	-80,050	0.
24	45.9	42.4	-81,395	0.0	-81,154	0.0	110,000					
Dece	mber		Des	ign	Week	day	Satu	rday	Sunda		Monda	
Hour		OAWB	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh		Htg Btuh	
1		29.4	-180,714	0.0	-221,635	0.0	-227,380	0.0	-225,710	0.0	-217,682	0.
2			-211,014		-243,010	0.0	-243,944	0.0	-242,312	0.0	-239,109	0.
3		25.9	-248,230		~253,400	0.0	-254,327	0.0	-252,733	0.0	-249,553	0.
4		24.9			-265,594	0.0			-273,792	0.0	-270,633	0.
	2/		-268.396	0.0	-200,004	0.0	-276,288	0.0	2.2,			0.
	26 1	24.0	-268,396 -281,209				-276,288 -289,901	0.0	-288,326	0.0	-285,189	
5			-281,209	0.0	-278,549	0.0				0.0	-285,189 -294,736	0
6	25.4	23.6	-281,209 -280,119	0.0	-278,549 -297,337	0.0	-289,901	0.0	-288,326			0
6 7	25.4 25.2	4 23.6 2 23.3	-281,209 -280,119 -273,921	0.0	-278,549 -297,337 -295,098	0.0	-289,901 -299,388 -297,091	0.0	-288,326 -297,851	0.0	-294,736	0
6 7 8	25.4 25.2	4 23.6 2 23.3 8 24.0	-281,209 -280,119 -273,921 -253,572	0.0 0.0 0.0 0.0 0.0	-278,549 -297,337 -295,098 -277,854	0.0	-289,901 -299,388	0.0 0.0 0.0	-288,326 -297,851 -295,591	0.0	-294,736 -292,497	0
6 7 8 9	25.4 25.2 25.1 25.1	23.6 2 23.3 8 24.0 5 25.7	-281,209 -280,119 -273,921 -253,572 -226,029	0.0 0.0 0.0 0.0 2 0.0	-278,549 -297,337 -295,098 -277,854 -252,382	0.0	-289,901 -299,388 -297,091 -313,033 -290,702	0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480	0.0 0.0 0.0	-294,736 -292,497 -294,250	0
6 7 8 9	25.4 25.2 25.1 27.1 30.2	23.6 223.3 824.0 525.7 27.9	-281,209 -280,119 -273,921 -253,572 -226,029 -188,518	0.0 0.0 0.0 2 0.0 9 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092	0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050	0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279	0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967	0 0 0
6 7 8 9 10	25.4 25.2 25.1 27.3 30.3 33.	23.6 223.3 824.0 525.7 27.9 430.3	-281,209 -280,119 -273,921 -253,572 -226,029 -188,518	0.0 0.0 0.0 2 0.0 9 0.0 9	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334	0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661	0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024	0 0 0 0
6 7 8 9 10 11	25.4 25.2 25.1 27.1 30.3 33.3 36.	23.6 223.3 824.0 525.7 27.9 430.3 932.7	-281,209 -280,119 -273,921 -253,572 -226,029 -188,518 -148,829	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667	0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344	0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740	0 0 0 0 0
6 7 8 9 10 11 12	25.4 25.2 25.2 25.2 30.3 30.3 33.4 2 36.4	23.6 223.3 824.0 525.7 227.9 430.3 932.7 235.1	-281,209 -280,119 -273,921 -253,572 -226,029 -188,518 -148,829 -110,240	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621	0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481	0 0 0
6 7 8 9 10 11	25.4 25.2 25.1 27.3 30.3 33. 36. 340.	23.6 223.3 824.0 525.7 27.9 430.3 932.7 235.1 836.9	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,240 -88,09	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -167,684 -139,086	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367	
6 7 8 9 10 11 12	25.4 25.2 3 25.1 9 27.1 9 30.1 1 33. 2 36. 3 40. 4 42.	23.6 223.3 824.0 525.7 227.9 430.3 932.7 235.1 836.9 638.1	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,240 -88,09 -76,170	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -167,684 -139,086 -96,849	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995	
66 77 88 99 10 111 122 133	25.4 25.2 25.1 27.1 30.1 33.1 2 36.1 3 40.4 42.4 44.5 5 44.5	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,176 -72,99	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -111,366 -96,849	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607	
66 77 88 99 100 111 122 133 144 151	25.4 25.2 3 25.1 3 27.1 3 30.1 2 36. 3 40. 4 42. 5 44.	23.6 223.3 824.0 525.7 227.9 430.3 932.7 235.1 836.9 638.1	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,170 -72,99 -76,62	0 0.0 0 0.0 2 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -167,684 -139,086 -111,366 -96,849 -92,416	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607	
66 77 88 99 10 111 122 133 144 151	25.4 25.1 25.1 25.1 3 27.1 3 30.1 3 30.1 4 42. 44. 45. 7 44.	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,176 -72,99 -76,62	0 0.0 0 0.0 2 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -167,684 -139,086 -96,849 -92,410 -94,299	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939 -130,090	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769 -128,951	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607 -90,580	
66 77 88 99 100 111 122 133 144 151 161	25.4 25.1 25.1 25.1 3 27.1 3 30.1 33.2 36.3 40.4 42.5 5 44.4 6 45.7	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5 9 38.7	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,176 -72,99 -76,62 -82,19	0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0 0.0 0 0 0 0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -167,684 -139,086 -96,849 -92,410 -94,299 -97,41°	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939 -130,090 -135,541	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769 -128,951 -134,427	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607 -90,580 -93,798 -103,386	
66 77 8 9 10 11 12 13 14 15 16 17	25.4 25.2 25.2 27.3 30.3 33.2 36.3 40.4 42.5 5 44.6 6 45.7 7 44.8 8 44.9	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5 9 36.7 3 39.6	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,176 -72,99 -76,62 -82,19 -92,27 -105,35	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -111,366 -96,849 -92,410 -94,299 -97,41*	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939 -130,090 -135,541 -144,295	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769 -128,951 -134,427 -143,208	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607 -90,580 -93,798 -103,386 -113,386	
66 77 88 99 10 11 12 12 14 11 14 11 14 11 14	25.4 25.2 25.2 27.3 30.3 33.2 36.3 340.4 44.5 544.5 744.8 844.9 943.0	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5 9 36.7 3 39.6	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,176 -72,99 -76,62 -82,19 -92,27 -105,35 -131,34	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -111,366 -96,849 -92,410 -94,299 -97,41' -106,92' -116,75	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939 -130,090 -135,541 -144,295 -153,453	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769 -128,951 -134,427 -143,208 -152,392	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607 -90,580 -93,798 -103,386 -113,386	
667777888991001111111111111111111111111111	25.4 25.1 25.1 27.1 30.1 33 2 36 3 40 4 42 5 44 6 45 7 44 8 44 9 43 0 41	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5 9 38.7 3 39.6 9 38.6	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,242 -88,09 -76,170 -72,990 -76,62 -82,19 -92,27 -105,35 -131,34 -156,93	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -111,366 -96,849 -92,410 -94,299 -97,41' -106,92' -116,75	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939 -130,090 -135,541 -144,295 -153,453	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769 -128,951 -134,427 -143,208 -152,392 -165,732	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607 -90,580 -93,798 -103,386 -113,386 -123,292 -136,971	
66 77 88 99 100 111 121 141 141 141 141 141 141 141 141	25.4 25.1 25.1 27.1 30.1 33 2 36 3 40 4 42 5 44 6 45 7 44 8 44 9 43 0 41 1 40 2 38	4 23.6 2 23.3 8 24.0 5 25.7 2 27.9 4 30.3 9 32.7 2 35.1 8 36.9 6 38.1 2 38.5 9 38.7 3 39.6 9 38.6	-281,209 -280,119 -273,921 -253,572 -226,029 -188,516 -148,829 -110,243 -88,09 -76,176 -72,990 -76,62 -82,19 -92,27 -105,35 -131,34 -156,93 -170,34	0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0 0.0 0 0 0 0	-278,549 -297,337 -295,098 -277,854 -252,382 -234,092 -199,196 -111,366 -96,849 -92,410 -94,299 -97,41° -106,920 -116,75 -126,66	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-289,901 -299,388 -297,091 -313,033 -290,702 -268,050 -232,334 -199,667 -166,909 -141,569 -127,966 -123,103 -126,939 -130,090 -135,541 -144,295 -153,453 -166,768	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-288,326 -297,851 -295,591 -311,480 -289,279 -266,661 -230,978 -198,344 -165,621 -140,310 -126,733 -121,904 -125,769 -128,951 -134,427 -143,208 -152,392	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-294,736 -292,497 -294,250 -262,967 -243,024 -197,740 -163,481 -134,995 -107,367 -92,935 -88,607 -90,580 -93,798 -103,386 -113,386	0 0 0 0

Trans Air Conditioning Economics By: Trane Customer Direct Service Network

BUILDING TEMPERATURE PROFILES - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

69.9 69.9 69.9 69.9 70.0 70.0 70.0

2 1 1 1 1

Mo./Hr. 1 1 2 10 2 4 1 13 1 1 1 1 1 1

3 3

Min. Temp.

Day Type

Room Number -----Temperature 1 2 3 4 5 6 7 Range (F) Max. Temp. 77.6 78.2 80.3 78.7 78.7 79.2 83.8 Mo./Er. 4 21 4 20 4 19 4 20 4 20 4 19 4 20 1 1 1 1 1 1 1 Day Type 0 0 0 0 0 0 Above 100 0 0 0 0 0 0 0 95 - 100 0 0 0 0 0 90 - 95 0 0 0 0 0 0 0 0 85 - 90 0 0 0 0 0 0 1,012 80 - 85 144 246 350 670 1,827 1,428 4,690 75 - 80 70 - 75 5,078 5,623 5,116 6,028 6,917 6,848 2,825 65 - 70 3,538 2,891 3,294 2,062 16 484 233 0 0 0 0 0 0 60 - 65 0 0 0 0 0 0 55 - 60 0 0 0 0 0 0 0 50 - 55 0 Below 50 0 0 0

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 4109 BASERUN FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	32,796	71	1,685	4
Feb	29,628	71	1,543	4
March	33,146	71	1,222	3
April	30,858	71	305	2
May	37,507	106	0	0
June	41,763	121	0	0
July	48,196	131	0	0
Aug	43,030	120	0	0
Sept	35,935	106	0	0
Oct	32,332	71	485	2
Nov	31,682	71	879	2
Dec	32,622	71	1,807	4
Total	429,495	131	7,926	4

Building Energy Consumption =

106,266 (Btu/Sq Ft/Year)

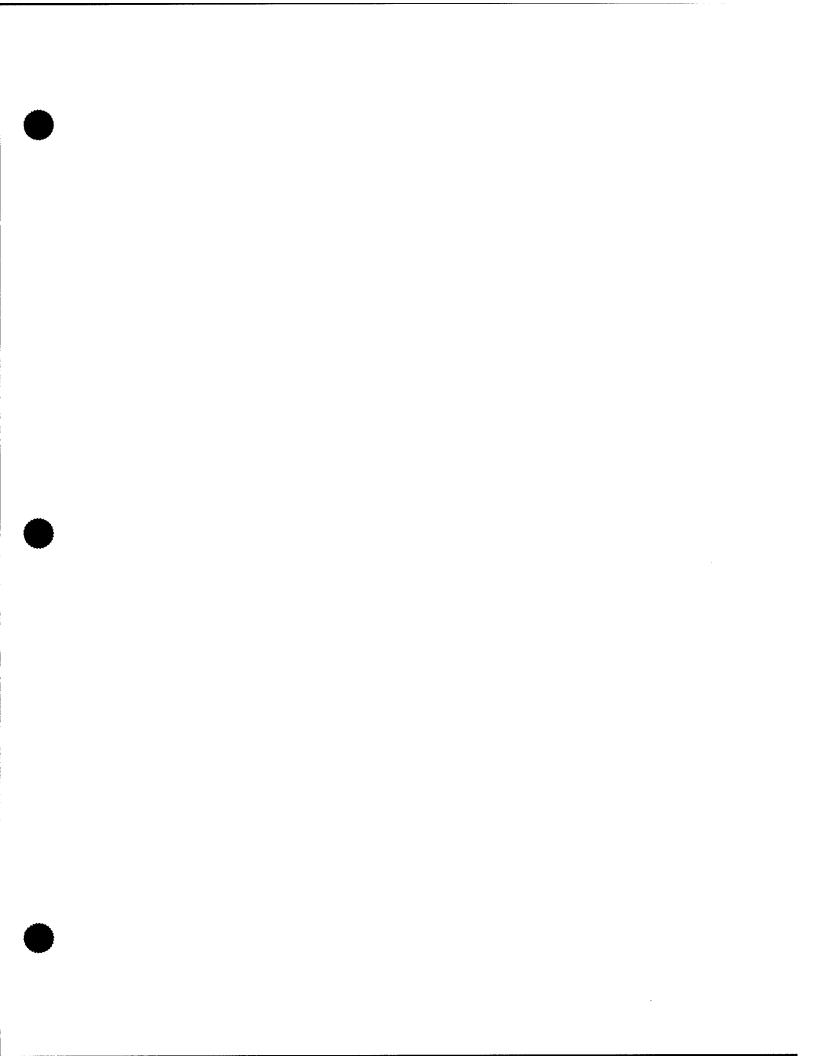
Source Energy Consumption = 246,194 (Btu/Sq Ft/Year)

Floor Area = 21,253 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
ELDG 4109 BASERUN FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION -----

	Equip -					Mont May	hly Cons	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	ria y	oune	5417						
0	LIGHTS													00 401
	ELEC	8341	7537	8544	8040	8442	8242	8240	8544	8040	8442	8040	8240	98,691 27.1
	PK	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	. 27.1	27.1	27.1
1	MISC LD										15471	14877	15324	181,645
	ELEC	15398	13910	15545	14877	15471	15024	15324	15545	14877	43.5	43.5	43.5	43.5
	PK	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.3	43.13	•••
2	MISC LD										0	o	0	0
	GAS	0	0	0	0	0	0	0	0	0		0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD								_	_	•	0	. 0	o
	OIL	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD						_		0	0	0	0	o	0
	P STEAM	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD			_		0	0	0	0	0	0	0	0	0
	P HOTHZO	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
6	MISC LD	_			0	0	0	0	0	0	0	0	0	0
	b chiff	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	• • • • • • • • • • • • • • • • • • • •			
1	EQ1121L			-CLD REC				44047	8962	4111	0	0	0	40,341
	ELEC	0	0	0	0	4356	8866	14047 55.0	44.2	31.1	0.0	0.0	0.0	55.0
	PK	0.0	0.0	0.0	0.0	31.4	45.4	33.0	44.2	32.1			-	
1	EQ5200			DENSER F		450	894	1342	898	433	0	0	0	4,021
	ELEC	0	0	0	0.0	453 3.1	3.9	3.9	3.9	3.0	0.0	0.0	0.0	3.9
	PK	0.0	0.0	0.0	0.0	3.1	3.9	3.9	3.5	2.0				
1	EQ5001	_		LLED WAT		c.v. 1260	1423	1665	1515	1193	0	0	0	7,056
	ELEC	0	0	0.0	0.0	2.2	2.2	2.2	2.2	2.2	0.0	0.0	0.0	2.2
	PK	0.0	0.0	0.0	0.0	2.2	2.2							
1	EQ5313	_		TROLS	0	169	191	223	203	160	0	0	o	946
	ELEC	0	0		0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.5	2.5	-,-				
2	EQ1121L		AII	R-CLD REC	IP 35-6	TONS								



¥ 600

PAGE 56

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1

BLDG 4109 BASERUN FT LEONARD WOOD

		_	0	0	o	0	o	0	0	0	0	o	0	0
	BIRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	•••							
2	EQ5200		CONDI	ENSER FA	MS									
	RFEC	0	0	0	0	0	0	0	0	0	0	О	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5001		CHIL	LED WATE	er pump c	.v.								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5313		CONT	ROLS										
_	ELEC	0	0	0	0	0	5	0	9	4	0	0	0	19
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.3
1	EQ4003		FC C	ENTRIF.	FAN C.V.									
	ELEC	417	376	417	403	417	403	417	417	403	417	403	417	4,906
	PK	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
2	EQ4003		FC C	ENTRIF.	FAN C.V.									
_	ELEC	833	752	633	805	833	806	833	833	806	833	805	833	9,802
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
3	EQ4003		FC C	ENTRIF.	FAN C.V.									
	ELEC	555	501	555	537	555	537	555	555	537	555	537	555	6,535
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
4	EQ4002		ві с	ENTRIF.	FAN C.V.									
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	5550	5371	5550	65,350
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
1	EQ2001		GAS	FIRE TU	be bot wa	TER								
	GAS	1685	1543	1222	305	0	0	0	0	0	485	879	1807	7,926
	PK	4.5	3.6	3.2	1.5	0.0	0.0	0.0	0.0	0.0	2.0	2.3	3.9	4.5
1	EQ5020		HEAT	WATER	CIRC. PUM	P C.V.								
	ELEC	417	376	417	202	0	0	0	0	0	260	403	417	2,491 0.5
	PK	0.6	0.5	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6
1	EQ5240		BOII	er forc	ED DRAFT									5,467
	BLEC	914	826	914	442	0	0	0	0	0	571	885	914	1.2
	PK	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2
1	EQ5307		BOII	LER CONT	ROLS	•								
	ELEC	372	336	372	180	0	0	0	0	0	233	360	372	2,225 0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	V.5

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1

BLDG 4109 NIGHT SETBACK FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	33,351	72	1,528	9
Feb	30,129	72	1,423	7
March	33,701	72	1,165	· 6
April	31,395	71	305	3
May	36,807	107	0	0
June	40,855	122	0	0
July	47,151	132	0	0
Aug	42,276	121	0	0
Sept	35,323	107	0	0
Oct	32,679	71	483	3
Nov	32,219	72	846	4
Dec	33,177	72	1,667	7
Total	429,063	132	7,417	9

Building Energy Consumption = Source Energy Consumption =

103,799 (Btu/Sq Ft/Year)

243,462 (Btu/Sq Ft/Year)

Floor Area = 21,253 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 4109 NIGHT SETBACK FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION -----

(C)	Equip -					Mont	chily com	mperon					_	
um	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS												2010	98,691
	ELEC	8341	7537	8544	8040	8442	8242	8240	8544	8040	8442	8040	8240 27.1	27.1
	PK	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27-1
1	MISC LD											14877	15324	181,645
	ELEC	15398	13910	15545	14877	15471	15024	15324	15545	14877	15471	43.5	43.5	43.5
	PK	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.3	43.3	43.5
2	MISC LD										_		0	0
	GAS	0	0	0	0	0	0	0	0	0	0	0	-	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD											_		0
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD												_	
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD											_	_	0
	P HOTH20	0	0	0	0	0	0	0	0	0	0	0	0	
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD										_	_		0
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121L		AIR	-CLD REC							_		o	35,714
	ELEC	0	0	0	0	3419	7935	12761	8105	3493	0	0.0	0.0	55.6
	PK	0.0	0.0	0.0	0.0	31.6	45.6	55.6	44.9	31.3	0.0	0.0	0.0	33.0
1	EQ5200			DENSER F									0	2,992
	ELEC	0	0	0	0	305	671	1026	678	311	0	0		3.4
	PK	0.0	0.0	0.0	0.0	2.7	3.4	3.4	3.4	2.6	0.0	0.0	0.0	3.4
1	EQ5001			LLED WAT							_	0	0	8,849
	ELEC	0	0	0	0	1665	1712	2236	1873	1363	0	0.0	0.0	3.4
	PK	0.0	0.0	0.0	0.0	3.4	3.4	3.4	3.4	3.4	0.0	0.0	0.0	3.4
1	EQ5313			TROLS						4.0-	_	_	0	791
	ELEC	0	0	0	0	149	153	200	167	122	0	0		0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3

PAGE 2

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 4109 NIGHT SETBACK FT LEONARD WOOD

				0	0	o	0	0	0	0	0	0	0	0
	ELEC	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
2	EQ5200		CONDE	NSER FAI	NS									
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5001		CHILI	ED WATE	R PUMP C.	v.								
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5313		CONT	ROLS									_	
	RLEC	0	0	0	0	0	0	9	8	0	0	0	0	17
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.3
1	EQ4003		FC C	ENTRIF.	FAN C.V.									
	ELEC	417	376	417	403	417	403	417	417	403	417	403	417	4,906
	PK	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
2	EQ4003		FC C	ENTRIF.	FAN C.V.									
	ELEC	833	752	833	805	833	806	833	833	806	833	806	833	9,802
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
3	EQ4003		FC C	ENTRIF.	FAN C.V.									e 535
	ELEC	555	501	555	537	555	537	555	555	537	555	537	555	6,535 0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
4	EQ4002		BI C	ENTRIF.	FAN C.V.									45 252
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	5550	5371	5550	65,350
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
1	EQ2001		GAS	FIRE TUE	E HOT WA	TER								
	GAS	1528	1423	1165	305	0	0	0	0	0	483	846	1667	7,417 9.5
	PK	9.5	6.9	6.1	2.7	0.0	0.0	0.0	0.0	0.0	3.3	4.0	7.1	9.5
1	EQ5020		HEAT	WATER O	CIRC. PUM	P C.V.								
	ELEC	417	376	417	202	0	0	0	0	0	260	403	417	2,491 0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	V.6
1	EQ5240		BOII	ER FORC	ED DRAFT									E 467
	RLEC	914	826	914	442	0	0	0	0	0	571	885	914	5,467 1.2
	PK	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2
1	EQ5307		BOII	LER CONT		•				_			270	2,225
	ELEC	372	336	372	180	0	0	0	0	0	233	360	372	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
1	EQ5013		WATI		PUMP C.V						. = =		222	4 704
	ELEC	278	251	278	269	0	0	0	0	0	173	269	278	1,794
	PK	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4
1	EQ5013		WAT	ER CIRC.	PUMP C.V	7.								

Trane Air Conditioning Economics

By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 4109 NIGHT SETBACK FT LEONARD WOOD

> 0 0 0 173 1,794 278 0 0 278 251 278 269 ELEC 0.4 0.4 0.4 0.0 0.0 0.0 0.0 0.0 0.4 0.4 0.4 0.4 PK

V 600

PAGE 3

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 4109 DDC CONTROL FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	33,351	72	1,313	8
Feb	30,129	72	1,254	. 5
March	33,701	72	1,037	4
April	30,817	70	217	1
May	34,957	104	0	0
June	38,391	118	0	0
July	44,221	128	0	0
Aug	39,849	117	0	0
Sept	33,563	103	0	0
Oct	32,397	71	372	1
Nov	31,860	71	644	4
Dec	33,177	72	1,448	5
Total	416,413	128	6,284	8

Building Energy Consumption =

96,441 (Btu/Sq Ft/Year)

Floor Area = 21,253 (Sq Ft)

Source Energy Consumption =

231,760 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 4109 DDC CONTROL FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION-----

	Equip -					Mont	hly Cons	umption						
Ref	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
٥	LIGHTS													
•	ELEC	8341	7537	8544	8040	8442	8242	8240	8544	8040	8442	8040	8240	98,691
	PK	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1
1	MISC LD									44077	15471	14877	15324	181,645
	ELEC	15398	13910	15545	14877	15471	15024	15324	15545	14877 43.5	43.5	43.5	43.5	43.5
	PK	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.3	43.3	4215	
2	MISC LD							_	_	0	0	0	0	0
	GAS	0	0	O	0	0	0	0	0		0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.5
3	MISC LD							_	_	0	o	o	o	0
	OIL	0	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•
4	MISC LD						_	0	0	0	0	0	0	0
	P STEAM	0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD				_	0	0	0	0	0	0	0	o	0
	P EOTE20	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •			
б	MISC LD	_	0	0	0	0	0	o	0	0	0	0	0	d
	b CHITT	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	•••						
1	EQ1121L	_		CLD REC	IP 35-60	TONS 2217	5999	10408	6179	2274	0	0	0	27,076
	ELEC PK	0.0	0.0	0.0	0.0	29.1	42.0	51.7	41.2	28.1	0.0	0.0	0.0	51.7
	**													
1	EQ5200			IDENSER I				849	527	209	0	0	0	2,30
	RLEC	0	0	0	0	203	516	3.4	3.3	2.4	0.0	0.0	0.0	3.4
	PK	0.0	0.0	0.0	0.0	2.5	3.4	3.4	3.3	2.4				
1	EQ5001			LLED WAT			1370	1873	1561	960	0	0	o	6,92
	ELEC	0		0	0	1162	3.4	3.4	3.4	3.4	0.0	0.0	0.0	3.
	PK	0.0	0.0	0.0	0.0	3.4	3.4	3.4	J. 4	3.4				
1	EQ5313			NTROLS	_	• • • •	122	167	139	86	0	0	o	61
	ELEC	0		0	0		0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.
	PK	0.0	0.0	0.0	0.0	0.3	0.3	V.3	0.3	0.3				
2	EQ1121L		AI	R-CLD RE	CIP 35-6	O TONS								

PAGE 8

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 4109 DDC CONTROL FT LEONARD WOOD

1 EQ5013

WATER CIRC. PUMP C.V.

BLDG	4109 DDC 0	CONTROL F	T LEONAR	m MOOD										
	ELEC	0	0	0	0	0	0	0	o	0	О	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	BQ5200		CONDE	ENSER FAN	ıs					_	_	_	0	0
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
2	BQ5001		CHIL	LED WATER				_		•	0	o	0	0
	BLEC	0	0	0	0	0	. 0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	EQ5313		CONT	ROLS										
-	EFEC	0	0	0	0	4	0	5	0	0	0	0	0	8
	PK	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.3
1	EQ4003		FC C	ENTRIF.	FAN C.V.									
	ELEC	417	376	417	403	417	403	417	417	403	417	403	417	4,906 0.6
	PK	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
2	EQ4003		FC C	ENTRIF.								806	833	9,802
	ELEC	833	752	833	806	833	806	833	833	806	833 1.1	1.1	1.1	1.1
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1	***	
3	EQ4003			ENTRIF.					555	537	555	537	555	6,535
	ELEC	555	501	555	537	555	537	555	0.7	0.7	0.7	0.7	0.7	0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	· · ·			
4	EQ4002		BIC	ENTRIF.	FAN C.V.									
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	5550	5371	5550	65,350
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
1	EQ2001		GAS	FIRE TUE	BE HOT W	ATER								6 204
	GAS	1313	1254	1037	217	0	0	0	0	0	372	644	1448	6,284 7.7
	PK	7.7	5.1	4.4	1.3	0.0	0.0	0.0	0.0	0.0	1.5	3.7	5.3	,.,
1	EQ5020		HEA!	r water o						_	•••	327	417	2,304
	ELEC	417	376	417	142	0	0	0	0	0	208 0.6	0.6	0.6	0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	
1	EQ5240			LER FORCE					•	0	457	718	914	5,055
	ELEC	914	826	914	312	0	0	0.0	0.0	0.0	1.2	1.2	1.2	1.2
	PK	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	1			
1	EQ5307			LER CONT			0	0	0	0	186	292	372	2,057
	ELEC	372	336	372	127	0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	•••			
1	BQ5013	 _		ER CIRC.		v. o	0	0	o	0	139	245	278	1,567
	ELEC	278 0.4	251 0.4	278 0.4	101 0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4
	PK	0.4	0.4	0.4	··•	0.0		*						

Trane Air Conditioning Economics

By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2

BLDG 4109 DDC CONTROL FT LEONARD WOOD

0

0

0.0 0.0 0.0 0.0

0

139

0

0

278

278 251

0.4 0.4 0.4

ELEC

PK

101

0.4

1,567

0.4

245

278

0.4

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 3

BLDG 4109 OA NIGHTIME FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	33,065	72	665	3
Feb	29,810	72	645	3
March	32,974	72	455	3
April	30,409	71	107	1
May	39,152	105	0	0
June	42,530	120	0	0
July	47,302	130	0	0
Aug	43,743	119	0	0
Sept	37,640	105	0	0
Oct	32,130	71	141	2
Nov	31,456	72	296	2
Dec	32,884	72	824	4
Total	433,096	130	3,133	4

Building Energy Consumption =

84,290 (Btu/Sq Ft/Year)

Source Energy Consumption = 224,188 (Btu/Sq Ft/Year)

Floor Area =

21,253 (Sq Ft)

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3
BLDG 4109 OA NIGHTIME FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION-----

Ref	Equip -					Mont	hly Cons	umption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS													00 601
	ELEC	8341	7537	8544	8040	8442	8242	8240	8544	8040	8442	8040	8240	98,691
	PK	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1
1	MISC LD									14877	15471	14877	15324	181,645
	ELEC	15398	13910	15545	14877	15471	15024	15324	15545 43.5	43.5	43.5	43.5	43.5	43.5
	PK	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.3	43.3		
2	MISC LD								0	o	0	o	0	o
	GAS	0	0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
3	MISC LD										0	o	0	0
	OIL	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD					_	_	0	0	0	0	0	0	0
	P STEAM	o	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD		_	_			0	0	0	0	0	o	0	o
	P HOTH20	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • •		
6	MISC LD		_		0	0	0	0	0	0	0	0	0	0
	P CHILL	0	0	0	-		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	•••		
1	EQ1121L			-CLD REC		TONS	8797	12615	8822	4914	0	o	o	40,143
	ELEC	0	0	0	0	30.3	44.0	53.5	42.9	29.7	0.0	0.0	0.0	53.5
	PK	0.0	0.0	0.0	0.0	30.3	44.0	33.3	42.9	23.,				
1	EQ5200	_	CON	DENSER F	ANS 0	433	757	1047	757	431	0	0	0	3,425
	elec PK	0.0	0.0	0.0	0.0	2.5	3.4	3.4	3.4	2.5	0.0	0.0	0.0	3.4
,	EQ5001		сні	LLED WAT	ER PUMP	c.v.								
-	ELEC	0	0	0	0	2246	2377	2498	2498	2068	0	0	0	11,686
	PK	0.0	0.0	0.0	0.0	3.4	3.4	3.4	3.4	3.4	0.0	0.0	0.0	3.4
1	EQ5313		CON	TROLS										
	BLEC	0	0	0	0	201	212	223	223	185	0	0	0	1,044
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
	EQ1121L			R-CLD REC										

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 4109 OA NIGHTIME FT LEONARD WOOD

		_		0	0	0	0	0	0	0	o	0	0	0
	BLEC	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0							
2	EQ5200		CONDE	NSER FAN	s									0
	RLEC	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5001		CHILL	ED WATER	PUMP C.	v.								_
_	ELEC	0	0	0	0	0	. 0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	BQ5313		CONTE	ROLS										
_	ELEC	0	0	0	0	9	4	0	0	9	0	0	0	22
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.3
1	EQ4003		FC CI	ENTRIF.	FAN C.V.									
_	ELEC	417	376	417	403	417	403	417	417	403	417	403	417	4,906
	PK	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6
2	EQ4003		FC C	ENTRIF.	FAN C.V.									
	ELEC	833	752	833	806	833	806	833	833	806	833	806	833	9,802
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
3	BQ4003		FC C	ENTRIF.	FAN C.V.									6 525
	BLEC	555	501	555	537	555	537	555	555	537	555	537	555	6,535 0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
4	EQ4002		BI C	ENTRIF.	FAN C.V.									ee 350
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	5550	5371	5550 7.5	65,350 7.5
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
1	EQ2001		GAS	FIRE TUE	E HOT WA								824	3,133
	GAS	665	645	455	107	0	0	0	0	0	141	296	3.6	3,133
	PK	3.1	3.3	2.7	1.1	0.0	0.0	0.0	0.0	0.0	1.8	2.0	3.0	3.5
1	EQ5020		HEAT	WATER (CIRC. PUM	E C.V.								1,601
	ELEC	347	305	240	67	0	0	0	0	0	75	222	345	0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0. 0
:	1 EQ5240		воп	LER FORCE	ED DRAFT						4.65	400	7 57	3,513
	ELEC	761	670	526	147	0	0	0	0	0	165	488 1.2	1.2	1.2
	PK	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	
:	1 RQ5307			LER CONT		,	_	_	_	0	67	199	308	1,430
	EFEC	310	272	214	60	0	0	0	0		0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	
	1 BQ5013				PUMP C.		_	_		^	278	257	278	1,652
	RLEC	278	236	276	50	0	0	0	0.0	0.0	0.4	0.4	0.4	0.4
	PK	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	U. *	V. 4	-14	
	1 BQ5013		WAT	BR CIRC.	PUMP C.	v.								

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600 PAGE 15

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3
BLDG 4109 OA NIGHTIME FT LEONARD WOOD

278 1,652 257 50 0 0 0 О 0 278 236 276 278 BLEC 0.0 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.0 0.0 0.0 0.0 0.4 PK

PAGE 18

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 4109 OA DAYTIME FT LEONARD WOOD

	ELEC	DEMAND	GAS	GAS DMND
	On Peak	On Peak	On Peak	On Peak
Month	(kWh)	(kW)	(Therm)	(Thrm/hr)
Jan	32,994	72	1,312	4
Feb	29,807	71	1,118	4
March	33,259	70	856	3
April	31,084	70	194	1
May	38,609	100	0	0
June	41,237	115	0	0
July	46,037	124	0	0
Aug	42,494	111	0	0
Sept	36,692	100	0	0
Oct	32,565	70	338	2
Nov	31,732	70	671	2
Dec	32,897	71	1,310	4
Total	429,406	124	5,798	4

Building Energy Consumption = Source Energy Consumption = 235,611 (Btu/Sq Ft/Year)

96,239 (Btu/Sq Ft/Year)

21,253 (Sq Ft) Floor Area =

BLDG 4109 OA DAYTIME FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4

----- EQUIPMENT ENERGY CONSUMPTION-----

							hly Const	ummtion -						
	Equip	Jan	Feb	Mar	Apr	Mont May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan				•		•						
0	LIGHTS							0040	8544	8040	8442	8040	B240	98,691
	ELEC	8341	7537	8544	8040	8442	8242	8240	27.1	27.1	27.1	27.1	27.1	27.1
	PK	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	2711	2,,,_		
1	MISC LD									14877	15471	14877	15324	181,645
	ELEC	15398	13910	15545	14877	15471	15024	15324	15545	43.5	43.5	43.5	43.5	43.5
	PK	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.3	43.0	•	
2	MISC LD									0	0	0	0	0
	GAS	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
3	MISC LD								_		•	o	0	0
	OIL	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	MISC LD							_		0	0	0	0	0
	P STEAM	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
5	MISC LD				_	_	0	0	0	o	0	0	0	0
	P HOTH20	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
6	MISC LD				o	0	0	0	0	0	0	0	o	o
	P CHILL	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
1	EQ1121L		AIF		CIP 35-60					3984	0	0	0	35,481
	ELEC	0	0	0	0	4576	7697	11441	7783 38.5	28.3	0.0	0.0	0.0	50.9
	PK	0.0	0.0	0.0	0.0	27.9	42.2	50.9	38.5	20.3	0.0	0.0	***	
1	L EQ5200			IDENSER I					675	358	0	o	0	3,068
	ELEC	0		О	0	406	672	956	3.1	2.4	0.0	0.0	0.0	3.4
	PK	0.0	0.0	0.0	0.0	2.4	3.4	3.4	3.1	2.4	0.0	•		
;	1 EQ5001				TER PUMP		2276	2498	2377	2122	0	o	o	11,431
	ELEC	0		0			3.4	3.4	3.4	3.4	0.0	0.0	0.0	3.4
	PK	0.0	0.0	0.0	0.0	3.4	3.4	J. 4	2.4					
	1 EQ5313			NTROLS	_		202	223	212	190	0	0	0	1,021
	ELEC	O						0.3	0.3		0.0			0.3
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3		- • -		
	2 EQ1121L		AI	R-CLD RE	CIP 35-6	0 TONS								

PAGE 20

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4
BLDG 4109 OA DAYTIME FT LEONARD WOOD

,	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
					_									
	EQ5200			NSER FAN	s 0	0	0	0	0	0	o	0	0	o
	ELEC	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	PK	0.0	0.0	0.0	0.0	0.0								
2	EQ5001		CHILL	ED WATER					_	0	0	0	0	0
:	ELEC	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
2	EQ5313		CONTE	ROLS										
	RTEC	0	0	0	0	8	5	0	4	4	0	0	0	21
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.3
			EC C	ENTRIF. I	FAN C.V.									
	EQ4003	417	376	417	403	417	403	417	417	403	417	403	417	4,906
	ELEC PK	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	PK	0.0	•••	• • • •										
2	EQ4003		FC C	ENTRIF.	FAN C.V.							005	833	9,802
	ELEC	833	752	833	806	833	806	833	833	806	833	806 1.1	1.1	1.1
	PK	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	***	
3	EQ4003		FC C	ENTRIF.	FAN C.V.									
	BLEC	555	501	555	537	555	537	555	555	537	555	537	555	6,535 0.7
	PK	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
4	EQ4002		BI C	ENTRIF.	FAN C.V.	•								
	ELEC	5550	5013	5550	5371	5550	5371	5550	5550	5371	5550	5371	5550	65,350
	PK	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
	EQ2001		GAS	FIRE TUE	E HOT W	ATER								
_	GAS	1312	1118	856	194	0	0	0	0	0	338	671	1310	5,798
	PK	4.5	3.7	3.2	1.3	0.0	0.0	0.0	0.0	0.0	2.0	2.3	3.9	4.5
	B 05000		UPAT	WATER O	יזפר. פווו	MP C.V.								
1	EQ5020 ELEC	329	297	309	125	0	0	0	0	0	181	284	348	1,874
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6
			2011	LER FORCI	en nasem	FAN								
1	EQ5240	723	652	677	275	0	0	0	0	0	398	623	764	4,113
	ELEC PK	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2
					201.0									
1	EQ5307			LER CONT		0	0	0	0	o	162	253	311	1,674
	ELEC	294	265	276	112	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0						
1	EQ5013			ER CIRC.			_	_	^	0	278	269	278	1,898
	ELEC	278	251	278	269	0	0	0	0.0	0.0	0.4	0.4	0.4	0.4
	PK	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.4			

WATER CIRC. PUMP C.V.

1 EQ5013

COMPUTER SIMULATIONS

BUILDING 5265

E M C ENGINEERS, INC DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS AJN

CHECKED BY:

DATE: BUILDING NO.: 18-Mar-93 5265

BLDG. TYPE: GENERAL MAINTENANCE

ENERGY CONSTANT CALCULATIONS

				TOTAL COLUMN LICENA LIC
ECC		37431 kWH	=	4.83E-06 kWH/CFM-HR
	194980 CFM *	784 HR/YR		
ECHC	38169 kWH -	37431 kWH	_ =	1.61E-06 kWH/CFM-HR
	194980 CFM *	2346 HR/YR		
NSUCHO	65786 kWH -	50566 kWH	_ =	1.22E-05 kWH/CFM-HR
1	194980 CFM *	6414 HR/YR		
NSUCC	65786 kWH -	50566 kWH	_ =	3.64E-05 kWH/CFM-HR
	194980 CFM *	2144 HR/YR		
DDCCHC	50566 kWH -	38169 kWH	_ =	2.71E-05 kWH/CFM-HR
-	194980 CFM *	2346 HR/YR		
DDCCC	50566 kWH -	38169 kWH	=	8.11E-05 kWH/CFM-HR
	194980 CFM *	784 HR/YR		
NSC	22730.4 MBtu -	17142.9 MBtu] =	8.53E+04 Btu/UA
	65507	UA		
DSC	17142.9 MBtu -	15648.1 MBtu	=	2.28E+04 Btu/UA
	65507	UA	l	
OPT	(2 HR/DAY X 272 DAY	/YR) - 294	HR/YR	
	\	•	=	250 HR/YR
CHWR	(0.915 kW X 0.012 Eff. >	(632 HRS X 2 Degrees	of Reset)	
	,	J	=	13.9 kWH/TON
OAR	506 HR/YR *	0.01	=	5.06 HR/YR
	L			

EMCENGINEERS, INC

DENVER • ATLANTA • GERMANY

JOB: FT. LEONARD WOOD, MO (EMC #3204.000)

CALCULATED BY:

BHS

CHECKED BY:

AJN

DATE: BUILDING NO .: 18-Mar-93 5265

BLDG. TYPE: GENERAL MAINTENANCE

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	22730	17143	15648	15648	5185	5229
COOLING (kWH)	65786	50566	38169	37431	62724	60176

SUPPLY AIR FAN	194980 CFM
FLOOR AREA	198876 FT ²
CFMI	29112 CFM
UA	65507 BTU/HR ● °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

BEACON F	RUN DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	DDC CONTROL
RUN3	ECONOMIZER
RUN4	NIGHTIME INFILTRATION (OA)
RUN5	DAYTIME INFILTRATION (OA)

HOURS OF	FOCCUPANCY			ANNUAL HEATING & CO	OOLING HOURS
M-F	700	1600	45 HR	HR. ON HEATING	1170 HR/YR
SAT.			0 HR	HR. ON COOLING	784 HR/YR
SUN.			0 HR	HR. OFF HEATING	3198 HR/YR
0011.	TOTAL OCCUPY	HR.	45 HR/WK	HR. OFF COOLING	2144 HR/YR
	TOTAL UNOCC.		123 HR/WK		
	ANNUAL OCCUP		2346 HR/YR	7	
	ANNUAL UNOCO	C. HR.	6414 HR/YR		

8760 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY 4368 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY 2928 HR/YR

4368 1170 3198 HR/YR HOUR SAVE (HEATING ONLY) 2144 HR/YR 2928 784 HOUR SAVE (COOLING ONLY)

HOAUHO	22730.4 MBtu -	5184.7 MBtu	=	9.40E+01 Btu/CFM-HR
	29112 CFM *	6414 HR/YR		
HOAUH	22730.4 MBtu -	5184.7 MBtu	=	1.88E+02 Btu/CFM-HR
	29112 CFM *	3198 HR/YR		
COAUHC	65786 kWH -	62724 kWH	=	1.64E-05 kWH/CFM-HR
	29112 CFM *	6414 HR/YR		
COAUC	65786 kWH -	62724 kWH	=	4.91E-05 kWH/CFM-HR
	29112 CFM *	2144 HR/YR		
НОАОНС	22730.4 MBtu -	5229.4 MBtu	=	2.56E+02 Btu/CFM-HR
	29112 CFM *	2346 HR/YR		
HOAOH	22730.4 MBtu -	5229.4 MBtu	_	5.14E+02 Btu/CFM-HR
	29112 CFM *	1170 HR/YR		
COAOHC	65786 kWH	60176 kWH	=	8.21E-05 kWH/CFM-HR
	29112 CFM *	2346 HR/YR		
COAOC	65786 kWH	60176 kWH	=	2.46E-04 kWH/CFM-HR
	29112 CFM *	784 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1/6 (10 MINUTES PER		=	0.17

EMCENGINEERS. INC. DATE: 22-Feb-93 TMB BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 5265BHL1 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: GENERAL MAINTENANCE FACILITY ZONE 1 (UH's) BLDG NO: REPAIR AND MAINTENANCE **BLDG FUNCTION:** # FLOORS 19,255 FLOOR AREA: (SQ. FT) 936 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST SOUTH EAST . NORTH 25,380 11,145 0 8,635 5,600 WALLS, GROSS (SQ. FT) 3,454 1.027 1,200 0 1,227 (SQ. FT) GLASS 245 140 21 0 84 PERSONNEL DOOR (SQ. FT) 2,184 2,464 4.872 (SQ. FT) 224 0 OVERHEAD DOOR, 5,340 7,341 16,809 O 4,128 (SQ. FT) WALLS, NET (SQ. FT) 19,923 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 4,872 PERSONNEL DOOR 245 (SQ. FT) (SQ. FT) OVERHEAD DOOR 13,588 6,470 0 2.800 INSULATED PANELS (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 1. OUTSIDE AIR FILM 0.17 0.43 4" FACE BRICK 0.91 AIR SPACE 4" FACE BRICK 2" RIGID INSULATION 6.68 AIR SPACE 2.02 8" CONCRETE BLOCK 2" INSULATION 0.68 INSIDE AIR FILM 8"CMU TOT. MASONRY WALL 10.89 7. 7.53 TOT. INSUL. PANEL 8.17 TOTAL R-WALL = 0.122 U=1/RTOTAL R-WALL = [(INSUL. PANEL SQ.FT. X R-PANEL) + (MASONRY WALL SQ.FT. X R-MASONRY WALL)] / TOTAL SQ.FT. R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 1" SINGLE PLY ROOF 0.88 2,5" INSUL, CONCRETE 2.70 1" SINGLE PLY ROOF 10.03 3" RIGID INSULATION 4. ~ A. هُمُ ؟ مُ 2岁" INSUL. CONCRETE 0.00 METAL DECK 5. 3"INSULATION 6 INSIDE AIR FILM 0.68 METAL DECK TOTAL R-ROOF = 14.46 0.069 U=1/R 1.76 R-GLASS DOUBLE PANE TRANSLUCENT FIBERGLASS **GLASS TYPE:** 0.66 SLF SLAB TYPE FLOOR: CONCRETE 7.53 R-PANEL METAL WITH 2" INSULATION INSULED PANEL TYPE: R-ODOOR 1.05 OVERHEAD DOOR TYPE: METAL R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0.000 0 = X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 0 0.000 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 17,373 0.685 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 25380 X CFM /OPENING /HR 1.600 32 DOOR OPENINGS / HR - SINGLE DOOR 20 14 X CFM /OPENING /HR 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 17419 TOTAL INFILTRATION (CFM) = 4,640 0.952 X DOOR 'U' = = ODOOR AREA 4,872 **UA ODOOR** 96 X DOOR 'U' 0.391 245 = PDOOR AREA **UA PDOOR** 2,056 0.122 X WALL 'U' = 16,809 = WALL AREA **UA WALL** X ROOF 'U' 1,378 0.069 = ROOF AREA 19,923 **UA ROOF** 1,963 X GLASS 'U' 0.568 3,454 UA GLASS = GLASS AREA 618 0.660 = SLAB PERIM. 936 X SLF **UA SLAB** X BASE. 'U' 0 0.000 UA BASEM. =B-WALL AREA 0 18,029 X A. T. F. 1.035 CFM 17419 INFILTRATION 28,779 TOTAL UA (BTU/HR°F)

E M C ENGINEERS. INC. DATE: 22-Feb-93 TMB PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY BY: JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: **AJN** CLIENT PROJ. ENG.: DOUG CAGE 5265BHL2 FILE: LOCATION: FT LEONARD WOOD BUILDING HEATING LOAD CALCULATION SHEET BLDG NAME: GENERAL MAINTENANCE FACILITY ZONE 2 (HV UNITS) BLDG NO: **BLDG FUNCTION:** REPAIR AND MAINTENANCE # FLOORS FLOOR AREA: (SQ. FT) 65,268 **SLAB PERIMETER: (FT)** 64 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL SOUTH EAST NORTH 390 1,622 0 0 (SQ. FT) 1,232 WALLS, GROSS 293 0 0 0 (SQ. FT) 293 **GLASS** 112 112 0 0 0 (SQ. FT) PERSONNEL DOOR 0 0 0 0 0 OVERHEAD DOOR, (SQ. FT) 1,217 278 0 WALLS, NET (SQ. FT) 939 0 (SQ. FT) 64,800 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 0 PERSONNEL DOOR 112 (SQ. FT) OVERHEAD DOOR 866 (SQ. FT) 0 616 INSULATED PANELS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) COMPONENTS **R-VALUE** WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 3. AIR SPACE FACE BRICK 6.68 2º RIGID INSULATION AIR SPACE 5. 8 CONCRETE BLOCK 2.02 2" INSULATION 6. INSIDE AIR FILM 0.68 8"CMU TOT. MASONRY WALL 10.89 7. 7.53 TOT. INSUL. PANEL TOTAL R-WALL = 8.50 0.118 U=1/RTOTAL R-WALL = [(INSUL. PANEL SQ.FT. X R-PANEL) + (MASONRY WALL SQ.FT. X R-MASONRY WALL)] / TOTAL BQ.FT. R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 1. OUTSIDE AIR FILM 0.17 1' SINGLE PLY ROOF 0.88 2.70 2.5" INSUL. CONCRETE .1" SINGLE PLY ROOF 3' RIGID INSULATION 10.03 4 7 A : 2 % # 82 G 1 2 C C 2岁" INSUL, CONCRETE 5. METAL DECK 0.00 3"INSULATION 6 0.68 INSIDE AIR FILM METAL DECK TOTAL R-ROOF = 14.46 U=1/R0.069 1.76 DOUBLE PANE TRANSLUCENT FIBERGLASS **R-GLASS GLASS TYPE:** 0.66 SLF CONCRETE SLAB TYPE FLOOR: R-PANEL 7.53 METAL WITH 2' INSULATION INSULED PANEL TYPE: R-ODOOR 1.05 OVERHEAD DOOR TYPE: **METAL** 2.56 R-PDOOR PERSONNEL DOOR TYPE: METAL III. INFILTRATION: 0 = X CFM / SQ.FT. 0.000 TIGHT WALL H/M/L (SQ.FT.) 187 0.115 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) М 0 0.000 X CFM / SQ.FT. = LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR 28 1.385 = DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 214 TOTAL INFILTRATION (CFM) = 0 **UA ODOOR** = ODOOR AREA ٥ X DOOR "U" 0.952 = 44 X DOOR 'U' 0.391 = **UA PDOOR** = PDOOR AREA 112 143 0.118 **UA WALL** = WALL AREA 1,217 X WALL 'U' == X ROOF 'U' 0.069 4,481 = ROOF AREA 64,800 = **UA ROOF** 166 0.568 X GLASS 'U' = GLASS AREA 293 **UA GLASS** 42 0.660 X SLF **UA SLAB** = SLAB PERIM. 64 X BASE. "U" 0.000 0 UA BASEM. =B-WALL AREA 0 222 214 X A. T. F. 1.035 INFILTRATION === CFM 5,099 TOTAL UA (BTU/HR°F)

EMCENGINEERS. INC. DATE: 22-Feb-93 BY: **TMB** PROJECT: EEAP. EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN **CLIENT PROJ. ENG.: DOUG CAGE** FILE: 5265BHL3 **LOCATION: FT LEONARD WOOD BUILDING HEATING LOAD CALCULATION SHEET** BLDG NO: BLDG NAME: GENERAL MAINTENANCE FACILITY ZONE 3 (AC UNITS) **BLDG FUNCTION:** OFFICE AREA / LOUNGE AREA # FLOORS FLOOR AREA: (SQ. FT) 4,216 **SLAB PERIMETER: (FT)** 84 I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL . NORTH SOUTH **EAST** WEST (SQ. FT) 841 841 WALLS, GROSS 0 0 120 (SQ. FT) 0 0 120 0 GLASS 0 0 PERSONNEL DOOR, (SQ. FT) 0 0 0 0 0 0 0 0 OVERHEAD DOOR, (SQ. FT) O 721 721 (SQ. FT) 0 0 WALLS, NET (SQ. FT) 0 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 0 PERSONNEL DOOR (SQ. FT) 0 OVERHEAD DOOR (SQ. FT) 224 0 224 0 **INSULATED PANELS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) COMPONENTS R-VALUE WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 1. OUTSIDE AIR FILM 2. 4" FACE BRICK 0.43 0.91 3. AIR SPACE FACE BRICK 4. 2" RIGID INSULATION 6.68 5. 8" CONCRETE BLOCK 2.02 AIR SPACE 0.68 2" INSULATION INSIDE AIR FILM 6. 8"CMU 7. TOT. MASONRY WALL 10.89 TOT. INSUL. PANEL 7.53 9.85 TOTAL R-WALL = 0.102 U=1/RTOTAL R-WALL = [(INSUL, PANEL SQ.FT, X R-PANEL) + (MASONRY WALL SQ.FT, X R-MASONRY WALL)] / TOTAL SQ.FT. R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 1. OUTSIDE AIR FILM 2. 1' SINGLE PLY ROOF 0.88 2.70 3. 2.5' INSUL. CONCRETE 1" SINGLE PLY ROOF 10.03 3" RIGID INSULATION ACT SATE A 2岁" INSUL, CONCRETE 0.00 **METAL DECK** 3"INSULATION 0.68 METAL DECK **INSIDE AIR FILM** 14.46 TOTAL R-ROOF = U=1/R 0.069 1.76 **R-GLASS** DOUBLE PANE TRANSLUCENT FIBERGLASS **GLASS TYPE:** 0.66 SLF CONCRETE **SLAB TYPE FLOOR:** R-PANEL 7.53 **METAL WITH 2" INSULATION INSULED PANEL TYPE:** R-ODOOR 1.05 METAL **OVERHEAD DOOR TYPE:** R-PDOOR 2.56 METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 0.000 X CFM / SQ.FT. = TIGHT WALL H/M/L (SQ.FT.) 0.115 97 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0.000 0 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 X CFM /OPENING /HR 1.600 DOOR OPENINGS / HR - SINGLE DOOR X CFM /OPENING /HR 1.385 0 DOOR OPENINGS / HR - DOUBLE DOORS TOTAL INFILTRATION (CFM) 97 0 X DOOR 'U' 0.952 0 UA ODOOR = ODOOR AREA 0 0 X DOOR 'U' 0.391 **UA PDOOR** = PDOOR AREA 0.102 73 721 X WALL "U" = WALL AREA UA WALL X ROOF 'U' 0.069 0 = ROOF AREA 0 **UA ROOF** 0.568 68 = GLASS AREA 120 X GLASS 'U' = **UA GLASS** 55 **UA SLAB** = SLAB PERIM. 84 X SLF 0.660 = Ö X BASE. 'U' UA BASEM. =B-WALL AREA 0 0.000 = 100 INFILTRATION CFM 97 X A. T. F. 1.035 TOTAL UA (BTU/HR°F) 297

DATE: 22-Feb-93 EMCENGINEERS. INC. **TMB** BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY 3204,000 JOB: CLIENT CONTRACT NO.: DACA 41-92-C-0098 AJN CHK: **CLIENT PROJ. ENG.: DOUG CAGE** 5265BHL4 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: GENERAL MAINTENANCE FACILITY ZONE 4 (UH's) BLDG NO: REPAIR AND MAINTENANCE **BLDG FUNCTION:** # FLOORS 8,520 FLOOR AREA: (SQ. FT) 403 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) WEST TOTAL **EAST** SOUTH NORTH 672 672 11,284 9,940 (SQ. FT) 0 WALLS, GROSS 160 1,280 1,000 120 0 (SQ. FT) **GLASS** 126 0 0 PERSONNEL DOOR, (SQ. FT) 0 126 2,772 84 0 0 2,688 OVERHEAD DOOR, (SQ. FT) 7,106 512 6,126 468 0 (SQ. FT) WALLS, NET (SQ. FT) 8,520 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) 2,772 PERSONNEL DOOR 126 (SQ. FT) OVERHEAD DOOR (SQ. FT) 5,642 4,970 336 0 (SQ. FT) INSULATED PANELS II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 **OUTSIDE AIR FILM** 0.43 4" FACE BRICK 0.91 AIR SPACE 4" FACE BRICK 2" RIGID INSULATION 6.68 4. AIR SPACE 2.02 8' CONCRETE BLOCK 5. 0.68 2" INSULATION INSIDE AIR FILM 6. 8"CMU TOT. MASONRY WALL 10.89 7. 7.53 8. TOT, INSUL. PANEL 8.22 TOTAL R-WALL = U=1/R0.122 TOTAL R-WALL = [(INSUL. PANEL BQ.FT. X R-PANEL) + (MASONRY WALL SQ.FT. X R-MASONRY WALL)] / TOTAL SQ.FT. R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 OUTSIDE AIR FILM 1" SINGLE PLY ROOF 0.88 2.70 2.5' INSUL. CONCRETE 1" SINGLE PLY ROOF 3" RIGID INSULATION 10.03 4. 2名" INSUL. CONCRETE 4 6 S 4 9 4 0.00 METAL DECK 5. 3"INSULATION 6 METAL DECK 0.68 INSIDE AIR FILM TOTAL R-ROOF = 14.46 0.069 U=1/R**R-GLASS** 1.76 DOUBLE PANE TRANSLUCENT FIBERGLASS GLASS TYPE: 0.66 SLF SLAB TYPE FLOOR: CONCRETE R-PANEL 7.53 METAL WITH 2" INSULATION INSULED PANEL TYPE: R-ODOOR 1.05 OVERHEAD DOOR TYPE: METAL R-PDOOR 2.56 **METAL** PERSONNEL DOOR TYPE: III. INFILTRATION: 0 X CFM / SQ.FT. 0.000 = TIGHT WALL H/M/L (SQ.FT.) 0 0.000 = X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0.693 ,824 = X CFM / SQ.FT. 11284 LEAKY WALL H/M/L (SQ.FT.) 128 DOOR OPENINGS / HR - SINGLE DOOR X CFM /OPENING /HR 1.600 X CFM /OPENING /HR 0 1.385 DOOR OPENINGS / HR - DOUBLE DOORS 7952 TOTAL INFILTRATION (CFM) = 2,640 X DOOR 'U' 0.952 = 2,772 **UA ODOOR** = ODOOR AREA 49 0.391 = X DOOR 'U' 126 **UA PDOOR** = PDOOR AREA 864 0.122 = X WALL 'U' 7,106 **UA WALL** = WALL AREA 589 8,520 X ROOF 'U' 0.069 = = ROOF AREA **UA ROOF** 727 X GLASS 'U' 0.568 = 1,280 = GLASS AREA **UA GLASS** 266 = SLAB PERIM. X SLF 0.660 = 403 **UA SLAB** X BASE. "U" 0.000 0 =B-WALL AREA 0 UA BASEM. 8,231 X A. T. F. 1.035 7952 INFILTRATION **CFM** 13,367 TOTAL UA (BTU/HR°F)

EMCENGINEERS, INC. DATE: 22-Feb-93 **TMB** BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 AJN CHK: CLIENT PROJ. ENG.: DOUG CAGE 5265BHL5 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** 5265 BLDG NAME: GENERAL MAINTENANCE FACILITY ZONE 5 (HV UNITS) **BLDG NO: BLDG FUNCTION:** REPAIR AND MAINTENANCE # FLOORS 75,060 FLOOR AREA: (SQ. FT) 784 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL SOUTH EAST WEST NORTH 20.036 2,912 7,513 4,375 5,236 (SQ. FT) WALLS, GROSS 587 4,512 991 1,687 (SQ. FT) 1,247 GLASS 77 21 245 (SQ. FT) 42 105 PERSONNEL DOOR 1,344 224 756 364 (SQ. FT) 0 OVERHEAD DOOR, 13,935 2,080 3,947 2,943 4,965 (SQ. FT) WALLS, NET 73,017 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) (SQ. FT) 245 1,344 PERSONNEL DOOR (SQ. FT) OVERHEAD DOOR 1.456 9,140 3,165 2,619 (SQ. FT) **INSULATED PANELS** II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) COMPONENTS R-VALUE WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 OUTSIDE AIR FILM 0.43 4" FACE BRICK 0.91 AIR SPACE 3. 4" FACE BRICK 6.68 2" RIGID INSULATION 4. AIR SPACE 8' CONCRETE BLOCK 2.02 0.68 2" INSULATION 6. INSIDE AIR FILM 10.89 8"CMU TOT, MASONRY WALL 7.53 8. TOT. INSUL. PANEL 8.69 TOTAL R-WALL = U=1/R 0.115 TOTAL R-WALL = [(INSUL, PANEL SQ.FT, X.R-PANEL) + (MASONRY WALL SQ.FT, X.R-MASONRY WALL)] / TOTAL SQ.FT. R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 1. OUTSIDE AIR FILM 0.17 0.88 1' SINGLE PLY ROOF 1" SINGLE PLY ROOF 2.5' INSUL. CONCRETE 2.70 10.03 200 B 4 . 0 . 4 . 0 . 4 . 4 . 4 3" RIGID INSULATION 26" INSUL. CONCRETE 0.00 METAL DECK 3"INSULATION - METAL DECK 0.68 INSIDE AIR FILM TOTAL R-ROOF = 14.46 0.069 U=1/R 1.76 R-GLASS DOUBLE PANE TRANSLUCENT FIBERGLASS GLASS TYPE: 0.66 SLF CONCRETE SLAB TYPE FLOOR: R-PANEL 7.53 METAL WITH 2" INSULATION INSULED PANEL TYPE: 1.05 R-ODOOR OVERHEAD DOOR TYPE: **METAL** R-PDOOR 2.56 PERSONNEL DOOR TYPE: **METAL** III. INFILTRATION: 0 0.000 X CFM / SQ.FT. TIGHT WALL H/M/L (SQ.FT.) 2,304 0.115 X CFM / SQ.FT. = 20036 AVG. WALL H/M/L (SQ.FT.) 0 X CFM / SQ.FT. 0.000 = LEAKY WALL H/M/L (SQ.FT.) 80 1.600 X CFM /OPENING /HR = DOOR OPENINGS / HR - SINGLE DOOR 1.385 14 DOOR OPENINGS / HR - DOUBLE DOORS X CFM /OPENING /HR 2398 TOTAL INFILTRATION (CFM) 1,280 0.952 X DOOR 'U' = = ODOOR AREA 1,344 **UA ODOOR** 96 X DOOR 'U' 0.391 = PDOOR AREA 245 **UA PDOOR** 1,604 X WALL 'U' 0.115 13,935 **UA WALL** = WALL AREA 5,050 0.069 X ROOF 'U' = ROOF AREA 73,017 **UA ROOF** 2,564 0.568 X GLASS 'U' 4,512 **UA GLASS** = GLASS AREA 517 X SLF 0.660 784 = SLAB PERIM. **UA SLAB** 0 X BASE. 'U' 0 0.000 =B-WALL AREA UA BASEM. 2,482 X A. T. F. 1.035 CFM 2398 INFILTRATION = 13,592 TOTAL UA (BTU/HR°F)

22-Feb-93 EMC ENGINEERS, INC. DATE: **TMB** BY: PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY JOB: 3204.000 CLIENT CONTRACT NO.: DACA 41-92-C-0098 CHK: AJN CLIENT PROJ. ENG.: DOUG CAGE 5265BHL6 FILE: LOCATION: FT LEONARD WOOD **BUILDING HEATING LOAD CALCULATION SHEET** BLDG NAME: GENERAL MAINTENANCE FACILITY ZONE 6 (AC UNITS) BLDG NO: OFFICE AREA / LOUNGE AREA **BLDG FUNCTION:** # FLOORS FLOOR AREA: (SQ. FT) 26,557 415 SLAB PERIMETER: (FT) I. AREAS: ([] FIELD VERIFIED ELEVATION PLANS) TOTAL WEST SOUTH EAST , NORTH 0 7,380 5,538 1,092 750 (SQ. FT) WALLS, GROSS 568 0 145 108 315 (SQ. FT) GLASS 0 84 0 (SQ. FT) 84 0 PERSONNEL DOOR 280 0 0 0 (SQ. FT) 280 OVERHEAD DOOR, 6,448 0 605 984 4,859 (SQ. FT) WALLS, NET (SQ. FT) 24,109 ROOF AREA (OR CEILING AREA IF ATTIC IS UNCONDITIONED) (SQ. FT) 84 280 PERSONNEL DOOR (SQ. FT) OVERHEAD DOOR 4,207 682 3,325 200 **INSULATED PANELS** (SQ. FT) II. CONSTRUCTION: ([] FIELD VERIFIED WALL, ROOF, WINDOW, DOOR TYPES) R-VALUE COMPONENTS WALLS: (SKETCH CROSS SECTION OF WALL) 0.17 OUTSIDE AIR FILM 0.43 4' FACE BRICK 0.91 AIR SPACE 4" FACE BRICK 6.68 2" RIGID INSULATION 5. 8 CONCRETE BLOCK 2.02 AIR SPACE 0.68 6. INSIDE AIR FILM 2" INSULATION TOT. MASONRY WALL 8"CMU 10.89 TOT. INSUL. PANEL 7.53 8.70 TOTAL R-WALL = 0.115 U=1/RTOTAL R-WALL = [(INSUL, PANEL SQ.FT, X.R-PANEL) + (MASONRY WALL SQ.FT, X.R-MASONRY WALL)] / TOTAL SQ.FT. R-VALUE COMPONENTS ROOF: (SKETCH CROSS SECTION OF ROOF) 0.17 **OUTSIDE AIR FILM** 1" SINGLE PLY ROOF 0.88 2.5" INSUL. CONCRETE 2.70 3. 1" SINGLE PLY ROOF 10.03 3' RIGID INSULATION 2名" INSUL. CONCRETE 0.00 METAL DECK 3"INSULATION 0.68 INSIDE AIR FILM - METAL DECK TOTAL R-ROOF = 14.46 0.069 U=1/R1.76 **R-GLASS** DOUBLE PANE TRANSLUCENT FIBERGLASS GLASS TYPE: 0.66 SLF SLAB TYPE FLOOR: CONCRETE **R-PANEL** 7.53 METAL WITH 2' INSULATION INSULED PANEL TYPE: 1.05 R-ODOOR METAL **OVERHEAD DOOR TYPE:** 2.56 R-PDOOR METAL PERSONNEL DOOR TYPE: III. INFILTRATION: 0 X CFM / SQ.FT. 0.000 TIGHT WALL H/M/L (SQ.FT.) 1,018 0.138 = 7380 X CFM / SQ.FT. AVG. WALL H/M/L (SQ.FT.) 0 0.000 **3**25 X CFM / SQ.FT. LEAKY WALL H/M/L (SQ.FT.) 0 1.600 X CFM /OPENING /HR DOOR OPENINGS / HR - SINGLE DOOR 14 1.385 X CFM /OPENING /HR DOOR OPENINGS / HR - DOUBLE DOORS 1032 TOTAL INFILTRATION (CFM) 267 0.952 X DOOR 'U' = ODOOR AREA 280 **UA ODOOR** 33 X DOOR 'U' 0.391 = UA PDOOR = PDOOR AREA 741 X WALL 'U' 0.115 = 6,448 = WALL AREA UA WALL 1,667 X ROOF 'U' 0.069 24,109 = ROOF AREA **UA ROOF** 323 0.568 X GLASS 'U' -= GLASS AREA 568 **UA GLASS** 274 0.660 = X SLF **UA SLAB** = SLAB PERIM. 415 0 X BASE. 'U' 0.000 22 0 UA BASEM. =B-WALL AREA 1,068 1.035 = 1032 X A. T. F. CFM INFILTRATION 4,373 TOTAL UA (BTU/HR°F)

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 11-Feb-93 DATE: PREPARED BY: CHECKED BY: EMC NO.:

T.M.B.

526521

5265

ZONE:

TOT Sen. TOT. Lat (BTU/H) (BTU/H) 2,750 4,750

475

4,750

2,750

FILE: BLDG:

	(BTU/H)	47	TOTAL											
Spaces	Sensible (BTU/H)	275				:	Total Wattage	8,500	1,932	1,008	80			11,520
of Conditioned	Typical Application	Factory					Watts/Fixture	250	84	168	20			TOTAL
Rates of Heat Gain from Occupants of Conditioned Spaces	Degree of Activity	Light bench work			Peak Wattage Value for Lights		Description	30 Tungsten-Halogen 250w	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	61 Exit Light			
	Activity	╢				Fixture	IV De	S	9	00	9			
	No. of Activity	10	!	101		No. of Fixture	Fixtures		23	9	4			67
	Zone			TOTAL		Zone	Š	F				 -1		TOTAL

			Peak Value for Internal Gains				
	7				Heat Gain		Total
2010 1	Zone No. of Equip.	dinb.	Description	Average Wattage	-	Total Wattage	(BTU)
è	Edulpmen	RA A	o Ton Crops	746		2,984	10,184
	\$ (2238	5%	4,476	15277
	7		_ _	1,492		14,920	50,922
	2		Official Machines				
		-					
				TOTAL	88	22,380	76,383

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41 –92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

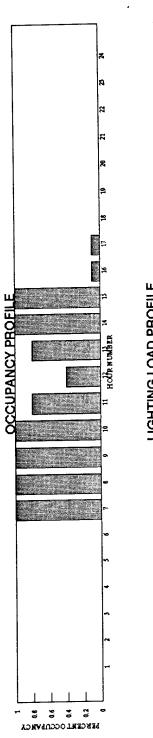
11-Feb-93 3204-000 EMC NO.:

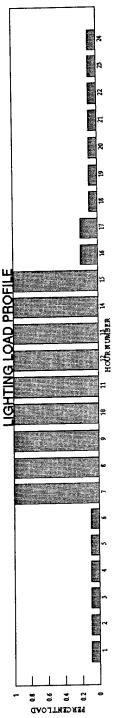
T.M.B. 딩

526521 DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

3	•	
ם בי	ZONE:	

20 18	R DG	TYPEOF										至	NHO	HOUR NUMBER	æ									
TVDE	ū	PROFILE	-	6	٣.	4	5	9	7	8	9 10	0 11	12	13	14 15 16 17 18 19 20 21 22 23	15	16	171	18	19	20	17	2 2	3 24
				╢		╢	╢				$\ $				-	ļ			ŀ	-	-	L	L	-
_	Gen Maint	COC IPANCY					_		_	_	_	108	0.8 0.4	0.0	_	Ξ	- -		_	-	+	+	1	+
		UNITHOIL	0 1 0 1	-	0	0	0.1	-	-	-	-	_	<u> </u>	-	-	-	02 02 0.1 0.1 0.1 0.1 0.1	02	7.0	<u>-:</u>	2.0	1.	1.	٠.
		5	•	;	;			+	1	1	1	1	ľ	0	0	1	0	,	-	-	-	L		_
		PROCESS	_					_	رن 0	9	Ö 9	0 9	070	0	0.3 0.6 0.6 0.6 0.3 0.2 0.3 0.6 0.5	S C	Z O	-	1	1	_	-	-	-
				1	1																			







E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 – 92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

11-Feb-93 T.M.B. 3204-000 PREPARED BY: EMC NO.: DATE:

N

TOT Sen. TOT. Lat (BTU/H) (BTU/H) 22,000 38,000

Rates of Heat Gain from Occupants of Conditioned Spaces

475

38,000

22,000

ZONE: 265.Z2 5265 띰

CHECKED BY:

22	_,
FILE:	BLDG:

		_	nales of fleat daill floii Societies			
ŀ	Ministral Anti-ity	Activity		Typical	Sensible	Latent
9u07		Type	Degree of Activity	Application	(BTU/H)	(BTU/H)
2	PACOPL			Enoton,	275	478
2	8	9	Light bench work	r actory	i	
TOTAL	S					TOTAL
O AL	3					
			Peak Wattage Value for Lights			
	- 11	2.00				
9U07		rixture		Watte/Fixture	Total Wattade	
è	Fixtures	>	Description	OLO		
8	106		30 Tungsten-Halogen - 250w	067	,	
	48		6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84		
	10		8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	-	
	19		61 Exit Light	ଷ	320	
-						
TOTAL	180			TOTAL	32,532	

			Peak Value for Internal Gains				
					Hoot Coin		Total
Zone	Zone No. of Equip	Equip		Average Wattage	-	Total Wattage	(BTU)
ģ	Equipmen	A De		972	78%	2,984	10,184
7	4		3 Ton Crane	OF C	20	44 400	38 191
	5		10 Ton Crane	2,238	8.C	261,11	10010
	15		I arge Industrial Machines (presses, lathes, etc.)	3,730	15%	09/4	00/70
	3 5		Cmall Industrial Machines (grinders, drills, etc.)	1,492	40%	28,348	96,752
	2		Ollian Indesiria machine (81112111111111111111111111111111111111	4 160	35%	24,960	85,188
_	9		Industrial Weiders				
		L					
					702.4	110 040	383 082
				TOTAL	8/I		200

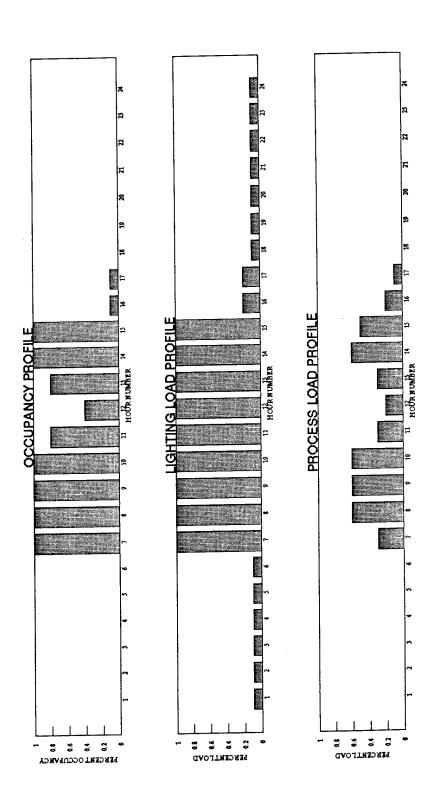
E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204 -- 000 EMC NO.:

11-Feb-93 T.M.B. CEL 526522 DATE: PREPARED BY: CHECKED BY:

FILE: BLDG: ZONE:

BL DG	BLDG	TYPE OF										Ĭ	HOUR NUMBER	UME	E,									
TYPE	FUNCTION		F	2	6	4	5	9	1	80	6	9	=	2 1:	10 11 12 13 14	15	19	4	15 16 17 18 19 20 21 22 23 24	19	ଷ	2	ผ	ន
									1	ŀ		ľ				ľ	•			ŀ	-	-	L	ŀ
7	Gen Maint	OCCUPANCY							-	-	-	-	8	0.8	_	_	0.1	0				1	-	+
-		- ICHTING	6	0.1	0.1	0.1 0.1 0.1	-	0.1	F	-	-	-	-	-	_		02	02	02 02 0.1 0.1 0.1 0.1	0.1	0.1	0.1	0.1	0.1
		5					T		6	000	3	5	0	6	00	4	C	5					_	_
		PROCESS							ر در	o.o	Q.O	0.	ن د	֡֝֒֝֞֜֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֜֜֓֓֓֓֓֜֓֡֓֓֡֓֜֡֓֓֡֓֜֜֓֡֓֡֓֡֓֜֜֡֓֡֓֜֡֓֜	0.3 0.6 0.6 0.3 0.2 0.8 0.3 0.5 0.1	5	7	-		1	1		1	-
				1										-										



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 EMC NO.: Date: Prepare Checkei File: Bldg:

ZONE

ო

2565

11-rep-93	T.M.B.	GEL	526523	3903
	ED BY:	:A BY:		

			Rates of Heat Gain from Occupants of Conditioned Spaces	of Conditioner	dSpaces			
75.55	No of	Activity	╢	Typical	Sensible		TOT Sen. TOT. Lat	TOT. Lat
Alloy V	Pan of	1	Degree of Activity	Application	(BTU/H)	(BTU/H)	(BTU/H) (BTU/H)	(BTU/H)
	1 00 01		Cooped light work trains	Offices, hotels, apts	520	200	3,750	3,000
?	2	*	Sagran, "Bill work, typing					
10.1	4					TOTAL	3,750	3,000
IOIAL	C							

			Peak Wattage Value for Lights		
Zone	No. of	Fixture			
Š	Fixtures	Type	Description	Watts/Fixture	iotal Wattage
က	9	9	6 Fluorescent, 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	504
	8		8 Fluorescent, 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	5,712
TOTAL	04			TOTAL	6216

Heat Gain Heat Gain 350 31% 350 31% 34% 32% 34% 34% 32% 34% 321 35% 321 35% 35% 321 35% 35% 321 35%		Total		0 20 0			1,000 3,413	300	400 1,365	600 2,048	71 242	3,000 10,239	482 1,645	321 1,096				13,632 46,526
Peak Value for Internal Gains Microcomputer Description Average Wattage to Space Microcomputer 350 870 Printer (laser) 250 88 Fan (Circulating) 100 I Typewriter 600 Microwave Oven 71 Radio 71 Redigerator (12 cu. ft.) 2241 Looke Machine 2321 TOOKe Machine 1500 TOTAL TOTAL				11														
Peak Value for Internal Gains Description Microcomputer Microcomputer Perinter (laser) Micro Fiche Machine Fan (Circulating) Typewriter Microwave Oven Microwave Oven Radio Coffee Maker Refrigerator (12 cu. ft.) Coke Machine		Hoot Cain			91%	34%	20%	20%	404	65%	40,	30%	20%	359				459
S S S S S S S S S S S S S S S S S S S			Average Wettern	Avoided Manage	320	870	250	88	190	009	77	1,500	241	321				TOTAL
	Peak Value for Internal Gains		2			ĸ	45	3	4 to Typewriter	1 46 Microwave Oven	A A Boalo	3	23	3 2	3			

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

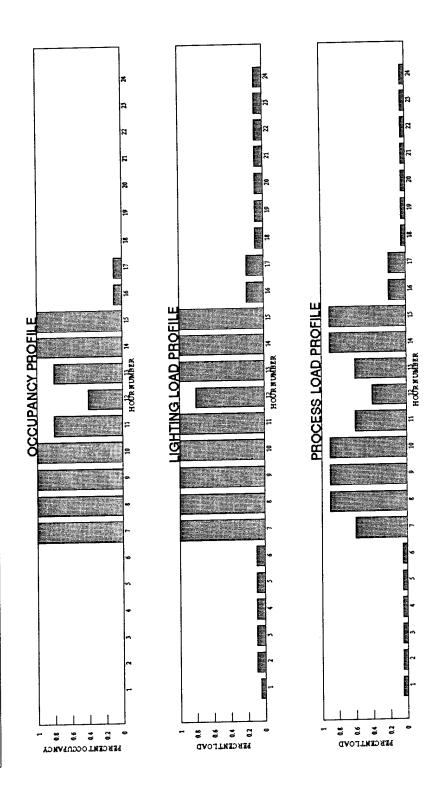
11-Feb-93 T.M.B. CEL 526573 DATE: PREPARED BY: CHECKED BY:

3204-000

EMC NO.:

FILE: BLDG: ZONE:

E DG	BI DG	TYPE OF									I	HOUR NUMBER		BEH									
TVDE	FINCTION	PROFILE	-	0	3	5	9	7	8	10	10	11	12	1 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	4	3 16	17	18	19	ୡ	21	N N	23
		2	-		,	1				11								L		-	-	ŀ	L
C	Activistration	OCC. IPANCY		-	H			-	-	=	_	0 8 0	4.0	ω; —	_	0	0			+	-	$\frac{1}{2}$	+
•		- IOUTING	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	-	-	0	c	-	-	-	-	-	8	-	-	102	02	0.1	0.1	<u>-</u>	0.1	<u>.</u>	0
			,		; -		-	-	-	+	-	1	!		1	1		1		1	3	٤	3
		PROCESS	0.05 0.0	25 0 0	5 00	5 0.05	0.05	9.0	60	о 6	60	90	0.4.0	9	0	9 02	02	<u>ရ</u>	8	S 2	3	υ C	5
		200																					



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41 –92 – C – 0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 11-Feb-93 EMC NO:

5265

ZONE

T.M.B. CEL 5265Z4 Date: Prepared by: Checked by: File: Bldg:

7	Lat	£	4.750		_	Ī	Ī	4.750		
	TOT	18		١			l		I	
	TOT Sen, TOT. Lat	(вти/н) (вти/н)	2.750	١				2750		
	latent		475					TOTAL	10.01	
dSpaces	Concible	(BTU/H)	275	613						
of Conditioner	Lociant	Application		Factory						
Bates of Heat Gain from Occupants of Conditioned Spaces		Ocean of Activity		Light bench work						
		Activity	edA	4	2					
		No. of	Feo DIB	5	2				Ç	2
		Zone	Š	_	7				TOT L	1017

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			7 - A - A
ž	No Fixtures Type	TVDB	Description		I OTBII WE
	14	57	57 HPS Modul Base, 250w with 55w ballast	305	4
	9		61 Exit light	82	120
)	5			
TOTAL	8			TOTAL	4 390
2	2				

			Peak Value for Internal Gains				
Zone	No. of	Equip.		Heat Gain	Heat Gain	Total Wattade	Total (BTC)
ž	No. Equipmen Type	Type	Description	Avelage wanded	/W 2000 C	1 402	5092
7	2		3 Ton Crane	/4b			
			40 Top Crape	2,238	2%	2238	1
	- 0		Cmall Industrial Machines	1,492	404	11,936	40,738
	٥						
							١
				TOTAL	%6	15,666	53,468

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

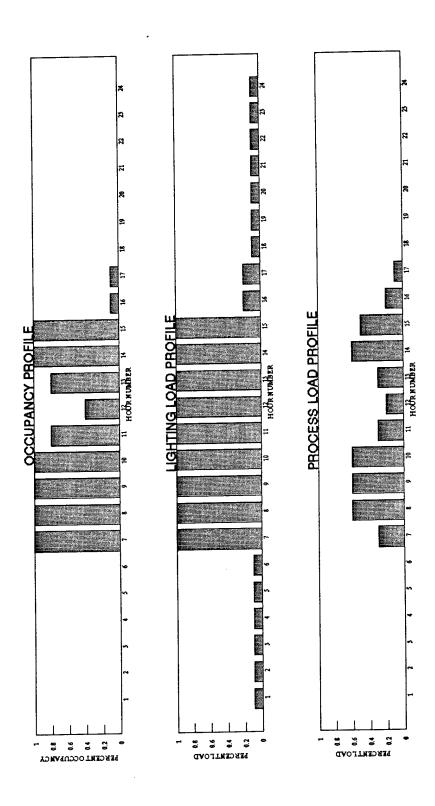
11-Feb-93 3204-000 T.M.B. Date: Prepared By: Checked By: EMC NO:

덩

526524

FILE: BLDG: ZONE:

BI DG	BLDG	TYPE OF		:								오	URN	HOUR NUMBER	EB										
TYPE	FLINCTION	PROFILE	-	7	6	4	5	9	7	8	9 10	0	17	13	14	15	16	17 18 19	48	6	ଯ	2	8	23	24
															-	-	ŀ	-			۲		ŀ	ŀ	ľ
7	Cen Maint	OCC. IPANCY		_			_		_	_	_	<u>~</u>	9. 0.	0.0	<u>-</u>	_	0	0					1		1
•		0.000	;	;	;	,	;	:		•	-	-	·	-	_	ľ	00	0	-	5	5	-	-	-	1.0
		ייב אוני	-	- -	-	- -		-	-	-	_	-			-		3	2	;	;	;	†	+	+	
		PROCESS					-	Ĕ	33 (0 90	9	0.6	3 02	033	9.0	0.55	02	0					-	_	
	_							-																	1



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 EMC NO.:
DATE:
PREPARED
CHECKED:
FILE:
BLDG:

M.B. CEL S525 5265

S

ZONE

23,750

13,750

TOTAL

(BTU/H) 23,750

(BTU/H)

Sensible (BTU/H)

Application Typical

Factory

Degree of Activity

6 Light bench work

People 50

No. Zone

જ

TOTAL

Activity Туре

No. of

Latent

Rates of Heat Gain from Occupants of Conditioned Spaces

13,750

TOT. Lat

TOT Sen. (BTU/H)

11-Feb	Ξ	•	226	ur.
Ë	EPARED BY:	ECKED BY:	üį	Ċ

			Peak Wattage Value for Lights		
Zone	No. of Fixture	Fixture			Total Wattern
Š.	Fixtures	2	Description		וסומו ואמנימאס
lc.	154	57	57 HPS - Modul Base, 250w with 55w ballast	305	020,03
Ì	124	٧	6 Fluorescent 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	10,416
	4	a	a Fluorescent 4 - 34w Jamps 2 - 16w ballasts 2x4 ft. fix.)	168	1,008
	o a	9 0	10 Incendescent - 75w	75	009
	0 0		51 Evit Liabt	8	200
	2				
				TATAL	ADC CA
TOTAL	312			DIAL	777

			Peak Value for Internal Gains				
					Heat Gain		Total
70U6	cone No. or Equip	Ldaib		Average Wattage	ته	Total Wattage	(BTU)
Ś	Eduipmen	ed A		746		4,476	15,277
-	9		S Ion Claire	2238	2%	22,380	76,383
	2		10 Ion Crane	1 120	10%	16,800	57,338
	<u>د</u> ا		Wood Shop Industrial Tools	1.492	10%	37,300	127,305
	S			75	20%	225	768
	8			009		1,200	4,096
	2			1 500		3,000	10,239
	2	24	Coffee Maker	2001			
		_					
							_
				TOTAL	10%	85,381	291,405
_	_						

E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO: DACA 41-92-C-0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 11-Feb-93 EMC NO.:

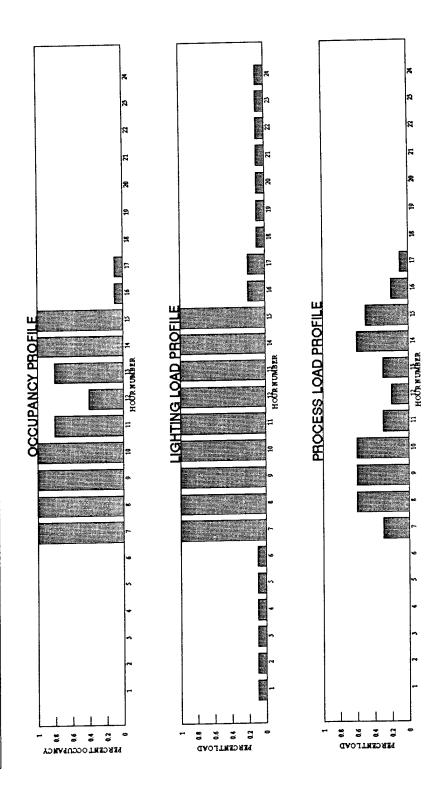
T.M.B. 딤 DATE: PREPARED BY: CHECKED BY:

526525

5265

FILE: BLDG: ZONE:

																								Γ
BLDG	BLDG	TYPE OF									_	至	N.	HOUR NUMBER										
YPF	FINCTION		F	2	3	4	5	3 7	7 8 5	6	10	=	12	13	4	15	9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	7	19	ଯ	21	ผ	ន	24
1	Son Maint	VOCAL IDANCY		-	1		-		-	-	-	0.8	1 0.8 0.4 0.8	0.8	F	1	.1 0	-	_					
-	Colt. Maint.	I KOHTING	01 01 01 01 01	-	0 1 0	1-0	C	L	-	-	-	-	-	-	-	-	1 02 02 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.1	0.	0.1	0.1	0.1	0.1	0.1
•		PROCESS		;	;	-	<u>-</u>	03	90	90	9.0	60	02	0.3	9.0	35 (03 06 06 06 03 02 03 06 05 02 01	1		Ш				
_		2000			1		1													١				



E M C Engineers, Inc.
PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY
CLIENT CONTRACT NO.: DACA 41–92–C–0098
CLIENT PROJ. ENG: DOUG CAGE
LOCATION: FT. LEONARD WOOD

3204-000 EMC NO.: DATE: PREPARED BY: CHECKED BY: FILE: BLDG:

11~Feb-93 T.M.B.

5265

ZONE:

CEL 526526

		Bates of Heat Gain from Occupants of Conditioned Spaces	of Conditione	dSpaces			
		וומופס סו ווכמו ממוו מספקקייים				TOT Can TOT I	TOT
No of	Activity		Iypical	Sensible			
; ;	ŀ	Degree of Activity	Application	(BTU/H)	(BTU/H)	(B10/H) (B10/H)	(B) U/H)
Feo Die	9d A	Minney to Bellier		1010	500	0	7 200
2	_	Project distribution	Offices, hotels, apts	DCZ	33		3
ક	+	Sealed, Ighi work, typing					
							_
					TOT	000	2000 2
36					וסוטר	2000	

36

TOTAL

Zone . 9

			Peak Wattage Value for Lights		
Zone	Zone No. of Fixture	Fixture			Total Wattern
Š.	Fixtures Type	Туре	Description		וסומו אמווסו
9	8	L	6 Fluorescent 2 - 34w lamps, 16w ballast (2x4 ft. fixture)	84	OBQ.
)			8 Fluorescent 4 - 34w lamps, 2 - 16w ballasts (2x4 ft. fix.)	168	51912
	8		F7 LIDS - Mooril Base 250w with 55w ballast	302	1,220
	* 0	5 \$	40 Incordescent - 75w	75	150
	7	2 3		20	9
	N	٥	01 EXIT LIGHT	C.	400
	6 0	S	5 Fluorescent, 1 - 34w lamp, 15w ballast (1x4 ft. fixture)	3	
	1			TOTAL	55.402
TOTAL	345				

	Total		17,918	44 540		6		1,365	8,191	090	1	2	3290	2,191	3.072			4,090		115.482	1
		Total Wattage	5250	49.050	3000	1,000	176	400	2.400	YOU	67	000'9	964	642	006	1 570		1200		33 836	
	Heat Gain	to Space (%)	91%	200	R \$2	20%	20%	10%	65%	2007	10%	30%	20%	35%	15%	7200	E 03	20%		A294	87 74 W
		Average Wattage	1950	35	0/8	250	88	190	009		71	1,500	241	321	300	000	0/6/1	75		TOTAL	IOIAL
Peak Value for Internal Gains		- Citaine		3 Microcomputer	5 Printer (leser)	Nicr	Fon (Circulating)	Si rai Circulania)	Iypewriter	Microwave Oven		od Coffee Moker	Colled Wahel	Hemgerauf (12 cu. 1.)	54 Coke Machine	62 Television (Color, tube)	10 Copier	Ep Couring Machine	Common Bullion of the Common Bullion of the		
		Equip.	IVDB							46	Ao	ř					10				
		No. of	No. Equipmen lype	15	7	2 8	1	7	4	4			1	4	7	<u>ო</u>		9	2		
		Zone	o Z	9																	

EMC Engineers, Inc.

PROJECT: EEAP, EMCS EXPANSION FEASIBILITY STUDY CLIENT CONTRACT NO.: DACA 41 –92 –C –0098 CLIENT PROJ. ENG: DOUG CAGE

LOCATION: FT. LEONARD WOOD

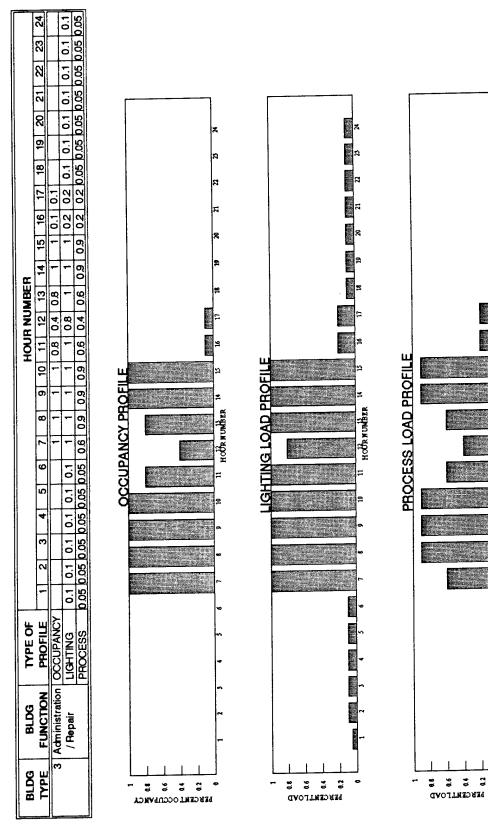
11-Feb-93 3204-000 EMC NO.: DATE:

T.M.B. 딤 PREPARED BY: CHECKED BY:

5265Z6 FIE

5265 6

BLDG: ZONE:



HOÜR NUMBER

01 Card - Job Information

Project: EEAP STUDY, EXPANSION OF EMCS

Location: FT. LEONARD WOOD, MO

Client: US ARMY

Program User: E M C ENGINEERS, INC.

CAR	D 08 Clim	atic Inform	ation					
	Summer	Winter	Summer	Summer	Winter		Summer	Winter
Weather	Clearness	Clearness	Design	Design	Design	Building	Ground	Ground
Code	Number	Number	Dry Bulb	Wet Bulb	Dry Bulb	Orientation	Reflect	Reflect
SPRINGFM	.97	.97	94	78	3			

CARD 0	9 Load Sim	ulation P	eriods			
1st Month	Last Month	Peak	1st Month	Last Month	1st Month	Last Month
Cooling	Cooling	Cooling	Summer	Summer	Daylight	Daylight
Simulation	Simulation	Load Hr	Period	Period	Savings	Savings
MAY	SEP		JUN	SEP	APR	OCT

CAR	D 10 L	oad Simulatio	n Paramet	ers		
Cooling	Reating		Airflow	Airflow	Room	Put Wall
Load	Load	Ventilation	Input	Output	Circulation	RA Load
Method	Method	Method	Units	Units	Rate	to Room
TETD-TA1	TETD-TA1	OADB	ACTUAL	ACTUAL	MED-RCR	NO

CARD 1	1 Energy S	imulation Par	ameters		
1st Month	Last Month	Level			Building
Energy	Energy	Of	Holiday	Calendar	Floor
Simulation	Simulation	Calculation	Code	Code	Area
TAN	DEC	ROOM	1978	1978	198876

CA	RD 13	Daylight	ing Param	eters -				
	Atmos	pheric						
Mois	ture	Turb	idity	In	side Visib	le Refle	ctivity	Daylighting
Summer	Winter	Summer	Winter	Floor	Ceiling	Wall	Partition	Geometry
		.07	.07					

----- Load Section Alternative #1 -----

---- Load Alternative ----

Number Description

BLDG 5265 BASERUN FT LEONARD WOOD

	Zone						Acoustic	Floor to	Duplicate	Duplicate	
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Beight	Resistance	Beight	Multiplier	Zone	
1	1	GEN MAINT BAYS	802.292	24	8	0		27.1			
2	2	GEN MAINT SHOP	1000	65.268	8	0		28			
3	3	GEN MAINT ADMIN	70.267	60	8	0		10			
4	4	GEN MAINT BAYS	355	24	8	0		28			
5	5	GEN MAINT SHOP	1000	75.06	8	0		24.6			
5	6	GEN MAINT ADMIN	1000	26.557	8	0		18.6			

CA	RD 21 The	rmostat	Parameters -							
	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	ROOM	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
М	72			CLG72SUM	70		ETG70WNT	ROOM	LIGHT10	NO
1										
2										
3					72		HTG72WNT			
4										
5										
6					72		HTG72WNT			

CARD 22 Roof Parameters													
		Roof											
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof				
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha				
1	1	NO	1000	19.923	.069	20			.45				
2	1	NO	1000	64.8	.069	20			.45				
4	1	YES			.069	20			.45				
5	1	NO	1000	73.017	.069	20			.45				
6	1	NO	1000	24.109	.069	20 `			.45				

CA	RD 24	Wall Para	ameters -						
					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Type	Direction	Tilt	Alpha	Multiplier
M	1				71			.45	

CARD 24 Wall Parameters		
	Wall	Ground

					Wall				Ground
Room	Wall	Wall	Wall	Wall	Constuc	Wall	Wall	Wall	Reflectance
Number	Number	Length	Height	U-Value	Туре	Direction	Tilt	Alpha	Multiplier
1	1	100	56	.16		0			
1	2	100	86.35	.364		90			
1	3	1000	11.145	.335		270			
2	1	100	12.32	.115		0			
2	2	39	10	.203		270			
3	1	100	8.41	.102		270			
4	1	100	99.4	.376		180			
4	2	67.2	10	.245		90			
4	3	67.2	10	.115		270			
5	1	100	52.36	.118		0			
5	2	100	75.13	.228		180			
5	3	100	43.75	.211		90			
5	4	100	29.12	.2		270			
6	1	100	55.38	.166		0			
6	2	75	10	.102		180			
6	3	100	10.92	.117		90			

CARD 25 Wall/Glass Par	rameters	

				Pct Glass			External	Internal	Percent		Inside
Room	Wall	Glass	Glass	or No. of	Glass	Shading	Shading	Shading	Solar to	Visible	Visible
Number	Number	Length	Width	Windows	U-Value	Coefficient	Type	Type	Ret. Air	Transmittance	Reflectance
м	1			1	.568	.58				.2	
1	1	100	12.27								
1	2	100	10.27								
1	3	100	12								
2	1	29.3	10								
3	1	12	10								
4	1	100	10								
4	2	12	10								
4	3	16	10								
5	1	100	12.47								
5	2	100	16.87								
5	3	99.1	10								
5	4	58.7	10								
6	1	31.5	10								
6	2	14.5	10								
6	3	10.8	10								

CA	RD 26 Sc	hedules					·			
Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting
Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls
м	FLW-P715	FLW-L716	AVAIL	AVAIL		AVAIL	AVAIL			
1						OFF	FLWFANWT			

	CA	JRD 26 E	chedules -									
	Room					Reheat	Cooling	Heating	Auxiliary	Room	Daylighting	
1	Number	People	Lights	Ventilation	Infiltration	Minimum	Fans	Fan	Fan	Exhaust	Controls	
1	2											
	3											
	4						OFF	FLWFANWT				
!	5											
	_											

	JRD 27	roopio u	_				Lighting		Percent	Daylig	hting
Room	People	People	People	People	Lighting	Lighting	Fixture	Ballast	Lights to	Reference	Reference
Number	Value	Units	Sensible	Latent	Value	Units	Type	Factor	Ret. Air	Point 1	Point 2
M		PEOPLE	275	475		WATTS					
1	10				11520		INCAND			1	1
2	80				32532		INCAND				
3	15				6216		SUSFLUOR				
4	10				4390		INCAND				
5	50				62244		INCAND				
6	36				55402		SUSFLUOR				

CA	RD 28 Mi	scellaneous Equipmen	ıt								
	Misc		Energy	Energy		Energy	Percent	Percent	Percent		
Room	Equipment	Equipment	Consump	Consump	Schedule	Meter	of Load	Misc. Load	Misc. Sens	Radiant	Optional
Number	Number	Descrip	Value	Units	Code	Code	Sensible	to Room	to Ret. Air	Fraction	Air Path
M	1	PROCESS		WATTS	FLW1E716	ELEC	100				Same-Ra
1	1		22380						8		
2	1		112242					17			
3	1		13632		FLW2E716			45			
4	1		15666					9			
5	1		85381					10			
6	1		33836		FLW2E716			42			
•	1				FLW2E716						

		Ventila	tion			Infil	tration			
Room	Cool	ing	Heat	ting	Coo	ling	Bea	ting	Reheat	Minimum
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
м		CFM		CFM		CFM		CFM		
1			0				17419			
2	0		35000				214			
3	10	PCT-MCLG	10	PCT-MRTG	97		97			
4			0				7952			
5			69072				2398			
6	2370	CFM	2370	CFM	1032		1032			

		Ma	1n		Auxiliary						
Room	Coo	ling	Bea1	ting	Coo	ling	Веа	ting	Room Exhaust		
Number	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units	
1	79100	CFM	79100	CFM							
2	83900	CFM	83900	CFM							
3	8080	CFM	8080	CFM							
4	59261	CFM	59261	CFM							
5	83550	CFM	83550	CFM							
6	23700	CFM	18930	CFM		•					

CARD 31 Partition Parameters									
Room	Partition	Partition	Partition	Partition	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Height	U-Value	Type	Flag	Temp	Temp	Room No
M	1				109	CONSTANT			
1	1	103	10						
2	1	1000	10.08						
3	1	15	10						
4	1	15	10						
5	1	1000	13.536						
6	1	1000	10.8						

CARD 32 Exposed Floor Parameters										
	Exposed	Slab-	Slab		Exposed Floor					
Room	Floor	Perimeter	Loss	Floor	Floor	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Coefficient	Area	U-Value	Type	Flag	Temp	Temp	Room No
1	1	936	.66							
2	1	64	.66							
3	1	84	.66							
4	1	403	.66							
5	1	784	.66							
6	1	415	.66							
6	1	415	.66							

----- System Section Alternative #1 -----

-----CARD 39-- System Alternative -----

Number Description

BLDG 5265 BASERUN FT LEONARD WOOD

-----CARD 40--- System Type ----------OPTIONAL VENTILATION SYSTEM-----System Ventil Set System Deck Cooling Heating Cooling Heating Static Location SADBVh SADBVh Schedule Schedule Pressure Number Type 1 UH

```
-----CARD 40--- System Type -----
           -----OPTIONAL VENTILATION SYSTEM------
System
           Ventil
Set System Deck Cooling Heating Cooling Heating Static
          Location SADBVh SADBVh Schedule Schedule Pressure
Number Type
    UV
3
    82
    TABVAV
----CARD 41-- Zone Assignment -----
                                         Ref #4
                                                    Ref #5
                                                                Ref #6
                   Ref #2
                              Ref #3
        Ref #1
Set
                                        Begin End Begin End Begin End
                             Begin End
                  Begin End
       Begin End
Number
                        4
       1
            1
1
             2
                  5
                        5
2
       3
             3
       6
             6
-----CARD 42--- Fan SP and Duct Parameters-----
System Cool Heat Return Mn Exh Aux Rm Exh Cool Return Supply Supply Return
Set Fan Fan Fan Fan Fan Fan Mtr Fan Mtr Duct Duct Air
               SP SP SP Loc Loc Ht Gn Loc
                                                    Path
Number SP SP SP
                                                    ROOMDK
                                   OMIT
                              OMIT
                                                    ROOMDK
                               OMIT OMIT
    .904
                                                    DUCTED
3
    .704
                                                    DUCTED
    1.86 .8
-----CARD 43-- Airflow Design Temperatures -----
System Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Design
Set Cooling Cooling Heating Cooling Cooling Preheat Preheat Room Ht Rec
                                                       Diff
Number SADE SADE SADE LV DB LV DB LV DB RH
2
3
    65.8
          65.8
4
----CARD 44-- System Options -----
System Econ Econ Max Pct Direct Indirect 1st Stage ------ Exhaust Air Heat Recovery ------
          On Outside Evap Evap Fan --- Effectiveness --- --- Control Method ---
Set Type
Number Flag Point Air Cooling Cooling Cooling System Room System Room
```

```
Econ Max Pct Direct Indirect 1st Stage ------ Exhaust Air Heat Recovery -------
On Outside Evap Evap Evap Fan --- Effectiveness --- --- Control Method ---
System Econ
Set Type
           Point Air Cooling Cooling Cooling Cycling System
                                                          Room System
Number Flag
     DRY-BULB 65
                100
3
     DRY-BULB 65
                100
4
----CARD 45--- Equipment Schedules -----
                    Direct Indirect Auxiliary Main
                                                Main
                    Evap Evap Cooling Heating Preheat Reheat Mech. Heating
    Cooling
Number Coil
                         Coil
                                         Coil
                                                Coil
                                                       Coil Humidity Coil
           Economizer Coil
                                  Coil
     OFF
            OFF
                                         AVAIL
1
                                         AVAIL
                                                OFF
     OFF
            OFF
                                         AVAIL
                                                OFF
     AVAIL
            AVAIL
                                          AVAIL
                                                OFF
                                                       AVAIL
     AVAIL AVAIL
4
----CARD 48-- Cooling Capacity Overrides -----
                       Misc
System
                          Capacity Capacity Capacity Capacity Capacity
Set People Lights Loads
Number Variance Variance Value Units Sizing Location Value
                                 MBH
                          0
                          0
                                 MBH
2
                          207.3
                                 MBH
                               MBH
4
                          607.9
-----CARD 49-- Heating Capacity Overrides ------
System ---MAIN HEATING--- ----PREHEAT----- -----REHEAT----- --HUMIDIFICATION-- ---AUX HEATING---
    Capacity Capacity Capacity Capacity Capacity Capacity Capacity Capacity Capacity
                                                     Units Value
Number Value
            Units
                   Value
                          Units Value
                                       Units Value
1
     3766.2 MBH
2
     7799.6 MBH
                   0
                          MBH
     96.7
                          мвя
3
            MBH
                   0
                          MBH
     363.3
            MAR
                   O
----- Equipment Section Alternative #1 -----
-----CARD 59-- Equipment Description / TOD Schedules ------
        Elec Consump Elec Demand Demand
Alternative Time of Day Time of Day Limit
Number
       Schedule Schedule Max KW Alternative Description
```

BLDG 5265 BASERUN FT LEONARD WOOD

```
----CARD 60--- Cooling Load Assignment-----
Load All Coil Cooling
Asgn Loads To Equipment -Group 1- -Group 2- -Group 3- -Group 4- -Group 5- -Group 6- -Group 7- -Group 8- -Group 9-
Ref Cool Ref Sizing Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End
               3 4
----CARD 62-- Cooling Equipment Parameters ------
Num Name Units Value Units Value Units Value Units Value Units Num Type Number
1 EQ1001S 1
-----CARD 63-- Cooling Pumps and References
Cool ---CHILLED WATER---- ----CONDENSER----- ---HT REC or AUX---- Switch-
Ref Full Load Full Load Full Load Full Load Full Load over Cold Cooling Misc.
Num Value Units Value Units Value Units Control Storage Tower Access.
1 3.544 KW
               3.73
                       KW
-----CARD 65-- Heating Load Assignment -----
Load All Coil
Assignment Loads To Group 1- Group 2- Group 3- Group 4- Group 5- Group 6- Group 7- Group 8- Group 9-
Reference Beating Ref Begin End Begin End Begin End Begin End Begin End Begin End Begin End Begin End
      1 1 4
-----CARD 67-- Heating Equipment Parameters -----
                           Energy Seq Switch
Cap'y Rate Order over Hot Misc.
Heat Equip Number HW Pmp
                                                                       Limit
Ref Code Of Full Ld
    Name Units Value Units Value Units Value Units Number Control Strg Acc. Cogen Number EQ2002 1 8.579 KW MBH 80 PCTEFF
Number Name
-----CARD 69-- Fan Equipment Parameters -----
System
Set
      Cooling Heating Return Exhaust Auxiliary Room Optional
            Fan Fan Supply Exhaust Ventilation
Number Fan
    EQ4371
1
2
     EQ4372
     EQ4002
3
     EQ4002 EQ4003
```

-----CARD 70-- Fan Equipment KW Overrides ---------MAIN SYSTEM---- --OTHER SYSTEM-- ----DEMAND LIMIT PRIORITY---System Cool Heat Ret Exh Aux Room Opt Set Fan Fan Fan Fan Sup Exh Vent Cool Heat Aux Exh Vent Number KW KW KW KW KW Fan Fan Fan Fan 5.968 2 73.108 3.544 3 16.9729.427

----- Load Section Alternative #2 ------

---- Load Alternative ----

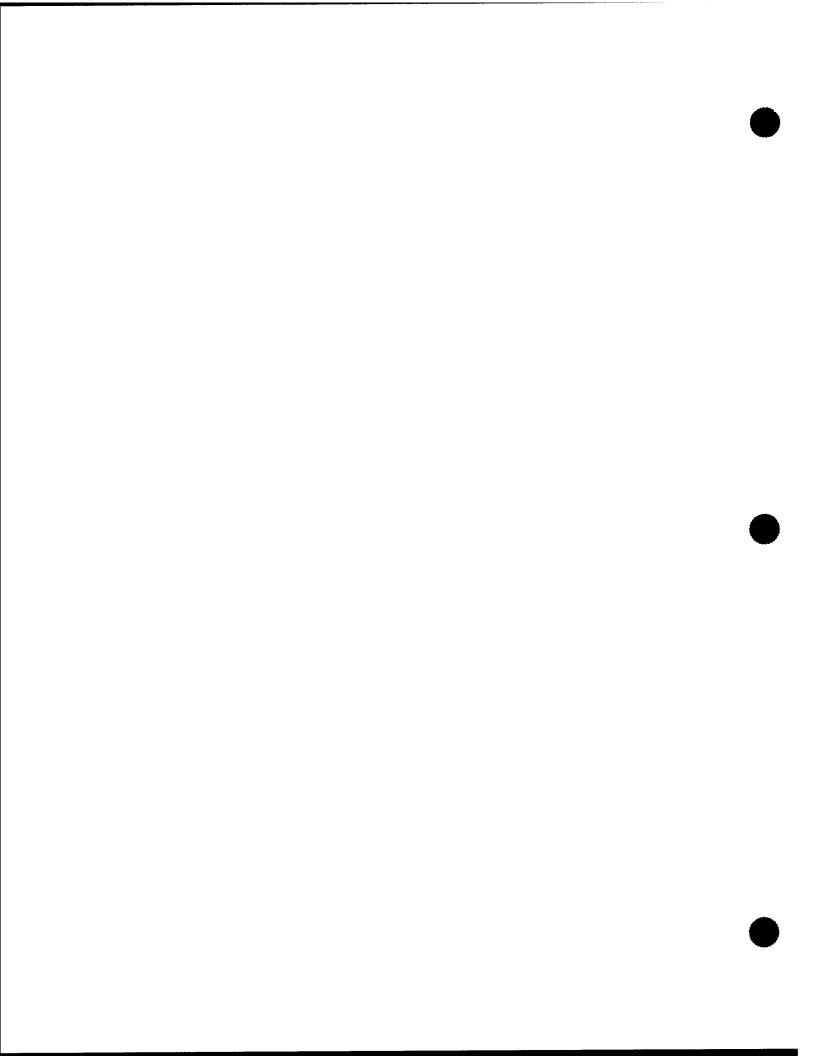
Number Description

BLDG 5265 NIGHT SETBACK FT LEONARD WOOD

CARD 20 General Room Parameters											
	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Туре	Height	Resistance	Height	Multiplier	Zone	
1	1	GEN MAINT BAYS	802.292	24	8	0		27.1			
2	2	GEN MAINT SHOP	1000	65.268	8	0		28			
3	3	GEN MAINT ADMIN	70.267	60	8	0		10			
4	4	GEN MAINT BAYS	355	24	8	0		28			
5	5	GEN MAINT SHOP	1000	75.06	8	0		24.6			
6	6	GEN MAINT ADMIN	1000	26.557	8	0		18.6			

	Cooling	Room	Cooling	Cooling	Beating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
м	72			CSB72SUM	70		HSB70WNT	ROOM	LIGHT10	NO
1										
2										
3					72		HSB72WNT			
4										
5										
6					72 .		HSB72WNT			

CARD 22 Roof Parameters										
			Roof							
	Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof
	Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha
	1	1	NO	1000	19.923	.069	20			.45
	2	1	NO	1000	64.8	.069	20			.45



Utility Description Reference Table

Schedules: AVAIL AVAILABLE (100%) CDDC78SM CLG DDC T-STAT AT 78 (MAY THRU SEPT) CLG72SUM COOLING TSTAT AT 72 (MAY TO SEPT) CSB728UM COOLING SE TSTAT AT 72 (MAY THRU SEPT) FLW-L716 LIGHTING SCHEDULE - 0700 TO 1600 FLW-P716 PEOPLE SCHEDULE - 0700 TO 1600 FLW1E716 EQUIP. SCHD.-0700 TO 1600 (NO NITE LOAD) FLW2E716 EQUIP. SCHD.-0700 TO 1600 (5% NITE LOAD) FLWFANWT FAN SCHEDULE - OCT THRU APR HDDC68WT HEATING DDC T-STAT AT 68 (OCT TO APR) HSB70WNT HEATING SB T-STAT AT 70 (OCT TO APR) HSB72WNT HEATING SB T-STAT AT 72 (OCT TO APR) HTG70WNT HEATING T-STAT AT 70 (OCT TO APR) HTG72WNT HEATING T-STAT AT 72 (OCT TO APR) OFF ALWAYS OFF System: SZ SINGLE ZONE TABVAV TERMINAL AIR BLENDER VAV

UH UNIT HEATERS

UV UNIT VENTILATOR

Equipment:

Cooling:

EQ1001S 2-STG CTV <555 TONS

Heating:

EQ2002 GAS FIRE TUBE STEAM

Fan:

EQ4002 BI CENTRIF. FAN C.V.

EQ4003 FC CENTRIF. FAN C.V.

EQ4371 FAN COIL SUPPLY FAN

EQ4372 UNIT VENTILATOR FAN

Schedule Name: AVAIL Project: AVAILABLE (100)

Location:

Client:

Program User:

Comments:

Starting Month: JAN Ending Month: ETG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

Schedule Name: CDDC78SM

Project: CLG DDC T-STAT AT 78 (MAY THRU

Location:

Client:

Program User:

Comments: CLG DDC T-STAT AT 78 (MAY THRU

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 90

6 78

19 90

24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 100

```
Schedule Name: CLG72SUM
Project: COOLING TSTAT SCHEDULE - 72
Location:
Client:
Program User:
Comments: COOLING T-STAT - SET AT 72 (MA
Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN
Hour Temperature
 0
 24
Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN
Hour Temperature
----
 0 72
 24
Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUM
Bour Temperature
```

Schedule Name: CSB72SUM

Project: COOLING SB TSTAT AT 72 (MAY THR

Location:

Client:

Program User:

Comments: COOLING SB TSTAT AT 72 (MAY TH

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Bour Temperature

0 100

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 90

19

6

Starting Month: OCT | Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0

Schedule Name: FLW-L716

Project: LIGHTING SCHEDULE

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: LIGHTING SCHEDULE - 0700 TO 16

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

0	10
7	100
16	20
18	10

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

1 10

24

Schedule Name: FLW-P716
Project: PEOPLE SCHEDULE
Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: PEOPLE SCHEDULE - 0700 TO 1600

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util Percent
0	0
7	100
11	80
12	40
13	80
14	100
16	10
18	0
24	

Schedule Name: FLW1E716
Project: EQUIPMENT SCHEDULE
Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - 0700 TO 1

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Bour Util Percent

0 -1
24

Schedule Name: FLW2E716
Project: EQUIPMENT SCHEDULE
Location: FT LEONARD WOOD, MO
Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: EQUIPMENT SCHEDULE - 0700 TO 1

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

Starting Month: JAN Ending Month: DEC Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent
---- 0 5
24

```
Schedule Name: FLWFANWT
```

Project: FAN SCHEDULE - OCT THRU APR

Location: FT LEONARD WOOD, MO

Client: US ARMY

Program User: EMC ENGINEERS, INC.

Comments: FAR SCHEDULE - OCT THRU APR

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

24

Starting Month: MAY Ending Month: SEP

Starting Day Type: DSGN Ending Day Type: SUN

Bour Util Percent

0 0

24

Starting Month: OCT | Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent ----

0 100

Schedule Name: HDDC68WT

Project: HEATING DDC T-STAT AT 68 (OCT T

Location:

Client:

Program User:

Comments: HEATING DDC T-STAT AT 68 (OCT

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 55

6 68

19 55

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 55

6 6

19 55

Schedule Name: ESB7CWNT

Project: HEATING SB T-STAT AT 70 (OCT TO

Client:

Program User:

Comments: HEATING SB T-STAT AT 70 (OCT T

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 55 70 6

55 19

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature ----

0 55

6

70 55 19

Schedule Name: HSB72WNT

Project: HEATING SB T-STAT AT 72 (OCT TO

Location: Client:

Program User:

Comments: HEATING SB T-STAT AT 72 (OCT T

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Temperature
0	55
6	72
19	55
24	

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature
---- 0 35
24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Bour	Temperature
0	55
6	72
19	55

Schedule Name: HTG70WNT

Project: HEATING T-STAT AT 70 (OCT TO AP

Location:

Client:

Program User:

Comments: HEATING T-STAT AT 70 (OCT TO A

Starting Month: JAN Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 70

24

Starting Month: MAY Ending Month: SEP
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

---- ------

0 70

Schedule Name: HTG72WNT

Project: HEATING T-STAT AT 72 (OCT TO AP

Location:

Client:

Program User:

Comments: HEATING T-STAT AT 72 (OCT TO A

Starting Month: JAN Ending Month: APR Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature ____

0 72

24

Starting Month: MAY Ending Month: SEP Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

----0 35

24

Starting Month: OCT Ending Month: DEC Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature ----

72 0

Schedule Name: OFF Project: ALWAYS OFF

Location: Client: Program User:

Comments:

Starting Month: JAN Ending Month: HTG Starting Day Type: DSGN Ending Day Type: BUN

Hour Util Percent

0 0
24

EEAP STUDY, EXPANSION OF EMCS
FT. LEONARD WOOD, MO
US ARMY
E M C ENGINEERS, INC.

SPRINGFM Weather File Code: SPRINGFIELD, MISSOURI Location: 37.0 (deg) Latitude: 93.0 (deg) Longitude: 6 Time Zone: 1,265 (ft) Elevation: 28.5 (in. Hg) Barometric Pressure: 0.97 Summer Clearness Number: 0.97 Winter Clearness Number: 94 (F)

Summer Design Dry Bulb: 94 (F)
Summer Design Wet Bulb: 78 (F)
Winter Design Dry Bulb: 3 (F)
Summer Ground Relectance: 0.20
Winter Ground Relectance: 0.20

Air Density: 0.0724 (Lbm/cuft)
Air Specific Heat: 0.2444 (Btu/lbm/F)
Density-Specific Heat Prod: 1.0621 (Btu-min./hr/cuft/F)
Latent Heat Factor: 4,675.1 (Btu-min./hr/cuft)
Enthalpy Factor: 4.3449 (Lb-min./hr/cuft)

Design Simulation Period: May To September
System Simulation Period: January To December
Cooling Load Methodology: TETD/Time Averaging

Time/Date Program was Run: 21:19:34 3/17/93
Dataset Name: 5265 .TM

AIRPLOW - ALTERNATIVE 1

BLDG 5265 BASERUN FT LEONARD WOOD

(Design Airflow Quantities)

				Main			Auxil.	Room
		Outside	Cooling	Heating	Return	Exhaust	Supply	Exhaust
System	System	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow
Number	Туре	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
1	UR	o	0	130,361	. 0	25,371	0	o
2	υv	104,072	0	167,450	170,062	106,684	О	0
3	sz	808	8,080	8,080	8,177	8,080	0	0
4	TABVAV	2,370	19,450	18,930	20,482	19,450	0	0
Totals		107,250	27,530	332,821	198,721	159,585	0	0

CAPACITY - ALTERNATIVE 1

BLDG 5265 BASERUN FT LEONARD WOOD

(Design Capacity Quantities)

			Coo	ling					Heating			
		Main Svs.	Aux. Sys.	Opt. Vent	Cooling	Main Sys.	Aux. Sys.	Preheat	Reheat	Humidif.	Opt. Vent	Heating
System					Totals	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Totals
•	- 4				(Tons)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)
Number	Type	(Tons)	(Tons)	(Tons)	(Tons)	(Bean)	(Btun)	(200)	(,	,		
_		0.0	0.0	0.0	0.0	-3,766,200	0	0	0	0	0	-3,766,200
1	UH	0.0					•	0	o	0	0	-7,799,600
2	υv	0.0	0.0	0.0	0.0	-7,799,600	0	U				
3	8Z	17.3	0.0	0.0	17.3	-96,700	0	0	0	0	0	-96,700
_		50.7		0.0	50.7	-363,300	О	0	0	0	0	-363,300
4	TABVAV	30.7	0.0	0.0				_		0	0	-12,025,800
Totals		67.9	0.0	0.0	67.9	12,025,800	0	0	0	Ų	U	-12,023,000

The building peaked at hour 15 month 7 with a capacity of 59.5 tons

ENGINEERING CHECKS - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

ENGINEERING CHECKS -----

			Percent		Cool	ing		Heat	ting	
System	Main/	System	Outside	Cfm/	Cfm/	Sq Ft	Btuh/	Cfm/	Btuh/	Floor Area
Number	Auxiliary	Туре	Air	Sq Ft	Ton	/Ton	Sq Ft	Sq Ft	Sq Ft	Sq Ft
1	Main	UH	0.00	0.00	0.0	0.0	0.00	4.98	-135.60	27,775
2	Main	uv	62.15	0.00	0.0	0.0	0.00	1.19	-55.58	140,328
3	Main	sz	10.00	1.92	467.7	244.1	49.17	1.92	-22.94	4,216
	Main	TABVAV	12.19	0.73	383.9	524.2	22.89	0.71	-13.68	26,557

System 1 Block UH - UNIT HEATERS

eaked at Time	:=>	Mo/Er:	0/	0			*	Mo/H	r: 0/	0	*		Mo/Hr: 13/	1	
outside Air ==>	Ož	DB/WB/HR:	C	0, 0, 0.0			*	OAD	B: ()	*		OADB: 3		
	Press	Pot A	.1-	Ret. Air	Net	Percnt	. *	Spa	ce	Percnt	*	Space Peak	Coil Pe	ak	Percni
	Space Sens.+Lat.	Sensib		Latent	Total	Of Tot		Sensib		Of Tot		Space Sens		ns	Of To
	(Btuh)	(Btu		(Btuh)	(Btuh)	(%)		(Btu		(%)	*	(Btuh)		h)	(%
nvelope Loads Skylite Solr	(2011)	(200	,	(200)	0	0.00		•	0		*)	0	0.0
Skylite Cond	0		0		0	0.00			0	0.00	*	C)	0	0.0
Roof Cond	0		0		. 0	0.00			0	0.00	*	-131,492	-131,4	92	4.5
Glass Solar	0		0		0	0.00			0	0.00	*	()	0	0.0
Glass Cond	0		0		0				0	0.00	*	-189,03	-189,0	31	6.5
	0		0		0				0	0.00	*	-693,860	-693,8	60	24.1
Wall Cond	0		Ŭ		0				0	0.00	*)	0	0.0
Partition	0				0				0	0.00	*	-59,21	-59,2	11	2.0
Exposed Floor					0				0	0.00	*	-1,805,369	-1,805,3	69	62.7
Infiltration	0		0		0				0	0.00	*	-2,878,96	3 -2,878,9	63	100.0
Sub Total==>	0		J		U	0.0	-				*				
nternal Loads	_		^		0	0.0	n *		0	0.00	*		D	0	0.0
Lights	0		0		0				0	0.00	*		0	0	0.0
People	0			•	0				0	0.00	*		0	0	0.0
Misc	0		0	0	0				0	0.00	*		0	0	0.0
Sub Total==>	0		0	0	0				0		*		0	О	0.0
eiling Load	0		0	_	c		-		0	0.00	*		0	0	0.0
utside Air	O		0	0					v		*			0	0.0
up. Fan Heat			_		-					0.00	*			0	0.0
et. Fan Heat			0				_			0.00	*			0	0.0
uct Heat Pkup			0				0 *		0	0.00	*		0	0	0.0
V/UNDR Sizing	C	1			(U	0.00	*		_	0	0.0
xhaust Heat			0	0		0.0				0.00	*			0	0.0
erminal Bypass	I		0	0	(0.0	10 -			0.00	*				
rand Total==>	ď)	0	o	(0.0	00 *		0	0.00	*	-2,878,96	3 -2,878,	963	100.0
			COOI	ING COIL SE	LECTION										
	1 Capacity			Coil Airfl		ing DB/W		Leav	ing DI	HR/EW/S		Gross Tota		s (sf) (%
(Tone	(Mbh)	(Mbh)		(cfm)	Deg F D	eg F Gr	ains	Deg F	Deg F	Grains		Floor 2	7,775		
ain Clg 0.		0.	0	0	0.0	0.0	0.0	0.0	0.0	0.0			1,180		
ix Clg 0.		0.	0	0	0.0	0.0	0.0	0.0	0.0	0.0		ExFlr	1,339		
ot Vent 0.	.0 0.0	0.	0	0	0.0	0.0	0.0	0.0	0.0	0.0			28,443		0
	.0 0.	0										Wall :	36,664	4,7	34
HRA	ring coil s	ELECTION			А	IRFLOWS	(cfm				ing	CHECKS	TEMPERA		
Capa	city Coil	Airfl F	Snt	Lvg	Type	Cooli	ng	Reating		g % OA	_	0.0	Type	Clg	Ht.
(M	bh) (cfm) De	eg F	Deg F	Vent		0	0		g Cfm/Sq		0.00	SADB	0.0	
ain Htg -3,7	56.2 13	8,361 (54.0	89.6	Infil		0	25,371		g Cfm/To		0.00	Plenum	0.0	
x Htg	0.0	0	0.0	0.0	Supply		0	138,361		g Sqft/T		0.00	Return	0.0	
reheat	0.0	0	0.0	0.0	Mincfm		0	0		g Btuh/S			Ret/OA	0.0	
eheat	0.0	0	0.0	0.0	Return		0	138,361		. People		0	Runarnd	0.0	
umidif	0.0	0	0.0	0.0	Exhaust		0	0		g % OA		0.0	Fn MtrTD	0.:	
	0.0	0	0.0	0.0	Rm Exh		0	0		g Cfm/Sq		4.98	Fn BldTD	0.:	
pt Vent												-135.60	Fn Frict	0.:	

2 Block

Total

-7,799.6

UV - UNIT VENTILATOR

Peaked at Time ==> Mo/Hr: 0/0 * Mo/Hr: 13/ 1 Mo/Hr: 0/0 OADB: 3 OADB/WB/HR: 0/ 0/ 0.0 OADB: 0 Outside Air ==> Net Percnt * Space Percnt * Space Peak Coil Peak Percnt Ret. Air Ret. Air Space Of Tot * Space Sens Of Tot Tot Sens Sens.+Lat. Sensible Latent Total Of Tot * Sensible (%) * (%) * (Btuh) (Btuh) (%) (Stub) Envelope Loads (Btuh) (Btuh) (Btuh) (Btuh) 0.00 * 0.00 * 0 0 0.00 0 Skylite Solr 0 0 0 0 0.00 0.00 * 0.00 * 0 0 0 Skylite Cond Q 0.00 * -637,128 7.42 0.00 * 0 -637.128 0 Roof Cond 0 0 0.00 0.00 * 0 0.00 * 0 0 0 Glass Solar 0.00 * -192,021 -192.021 2.24 0 0 0 0.00 * 0 Glass Cond 0.00 * -212,016 2.47 0.00 * 0 -212,016 Wall Cond 0 o n 0.00 * 0 0 0.00 0.00 * 0 0 Partition n 0.00 * -37,499 0.44 0 0.00 * 0 -37,499 Exposed Floor 0 0 . 0.00 * -185,867 -185,867 0.00 * ٥ 0 Infiltration 0.00 * 0.00 * -1,264,531 -1,264,531 14.72 0 0 0 0 Sub Total ==> Internal Loads 0.00 0 0.00 * 0 0 0 0.00 * Lights 0 ٥ 0.00 0 0 0 0.00 * 0 0.00 * People Ω 0 0.00 0.00 * 0 0.00 * 0 0 0 0 Misc 0.00 * 0 0 0.00 0 0.00 * 0 0 Sub Total ==> 0 0.00 * 0 0 0.00 0 0 0.00 * 0 0 Ceiling Load 0 0.00 * 0 -7,405,637 86.21 0 0.00 * 0 Outside Air 80,376 -0.94 0.00 0 0.00 * Sup. Fan Heat 0 0.00 0.00 0 0.00 * Ret. Fan Heat 0 0.00 0.00 * 0-00 * 0 n Duct Heat Pkup 0.00 0.00 * 0.00 * 0 0 0 0 OV/UNDR Sizing 0.00 0 0.00 * 0.00 * 0 0 0 Exhaust Reat 0.00 0.00 * 0 0 0 0.00 * Terminal Bypass 0.00 * -1,264,531 -8,589,792 100.00 0.00 * 0 0 0 0 Grand Total ==> -----AREAS----------COOLING COIL SELECTION-----Gross Total Glass (sf) (%) Total Capacity Sens Cap. Coil Airfl Entering DB/WB/HR Leaving DB/WB/HR Floor 140,328 Deg F Deg F Grains Deg F Deg F Grains (Mbh) (cfm) (Tons) (Mbh) 0.0 Part 23,616 0.0 0.0 0.0 0.0 0.0 0 Main Clg 0.0 0.0 0.0 0.0 0.0 0.0 0.0 ExF1r 848 0.0 0.0 0.0 0 0.0 Aux Clg 0 0 137,817 0.0 Roof 0 0.0 0.0 0.0 0.0 0.0 Opt Vent 0.0 0.0 0.0 4,809 22 21,658 Wall Totals 0.0 0.0 -----AIRFLOWS (cfm)------ -- ENGINEERING CHECKS-- -- TEMPERATURES (F)---------HEATING COIL SELECTION-----Type Clg 0.0 Clg % OA Capacity Coil Airfl Ent Lvg Type Cooling Heating Clg Cfm/Sqft 0.00 SADB 0.0 77.1 104.072 Vent 0 (Mbh) (cfm) Deg F Deg F 2.612 Clg Cfm/Ton 0.00 Plenum 0.0 70.0 0 -7,799.6 167,450 33.3 77.1 Infil Main Htg 0.0 70.0 Clg Sqft/Ton 0.00 Return Supply 0 167,450 Aux Etg 0.0 0 0.0 0.0 Clg Btuh/Sqft 0.00 Ret/OA 0.0 0 0.0 Mincfm 0 Preheat -0.0 167,450 28.8 0.0 70.0 0 Runarnd 167,450 No. People 0 0 0.0 0.0 Return 0.0 Reheat 62.2 Fn MtrTD 0.2 0.0 104,072 Htg % OA 0.0 0.0 Exhaust 0 Bumidif 0.0 0 Fn BldTD 0.1 0 Htg Cfm/SqFt 1.19 0.0 Rm Exh 0 Opt Vent 0.0 0 0.0 0.0 Fn Frict 0.3 Htg Btuh/SqFt -55.58 0.0

Auxil

Bystem 3 Peak SZ - SINGLE ZONE

Peaked at Time ==>		Mo/Hr: 7	/15			*	Mo/Hr:	7/15	*	1	10/Hr: 13/	1	
outside Air ==>	OADI		4/ 78/124.0			*	OADB:	94	*		OADB: 3		
						*			*				
	Space	Ret. Air	Ret. Air	Net	Percnt	*	Space			Space Peak	Coil Pea		ercnt
Ser.	ns.+Lat.	Sensible	Latent	Total	Of Tot	*	Sensible			Space Sens	Tot Sen		f Tot
nvelope Loads	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(*)	*	(Btuh)	(0)	*	(Btuh)	(Btuh	-	(%) 0.00
Skylite Solr	0	0		0	0.00	*	0	0.00	*	0		0	0.00
Skylite Cond	0	0		0	0.00	*	C	0.00	*	0		0	0.00
Roof Cond	0	0		´ 0	0.00	*		0.00	*	0		0	0.00
Glass Solar	8,520	0		8,520	8.05	*	8,520	10.01	*	-4,935	-4,93	•	6.48
Glass Cond	1,486	0		1,486	1.40	*	1,486			-5,074	-5,07		6.67
Wall Cond	3,265	0		3,265	3.09	*	3,265		*	-5,074		0	0.00
Partition	0			0	0.00	*	(, 0.00			-3,82		5.02
Exposed Floor	0			0	0.00	*			*	-3,825 -7,108	-7,10		9.34
Infiltration	4,683			4,683	4.43	*	2,266	, 4.20		•	-20,94		27.51
Sub Total==>	17,954	0		17,954	16.97	*	15,538	29.20	*	-20,943	-20,94		
nternal Loads						*				0		0	0.00
Lights	21,215	0		21,215	20.00	*	21,21					0	0.0
People	11,250			11,250		*	4,12	, ,,,,	*	0		0	0.0
Misc	11,725	0	0	11,725	11.08	*	11,72	22.04	*	0		0	0.0
Sub Total ==>	44,190	0	0	44,190	*****	*	37,06		*	0		0	0.0
eiling Load	0	0		0	0.00	*		• • • • • • • • • • • • • • • • • • • •	*	0		-	77.7
itside Air	0	0	0	39,006	36.88	*	1	• • • • • • • • • • • • • • • • • • • •	*	0	-		-5.2
up. Fan Heat				4,022	3.80	*		0.00	*		4,0	0	0.0
et. Fan Heat		0		0	0.00	*		0.00	*			0	0.0
uct Heat Pkup		0		0	0.00	*		0.00	*			0	-0.0
V/UNDR Sizing	603			603	0.57	*	60			C	1	0	0.0
xhaust Heat		0	0	C	0.00	*		0.00	*			0	0.0
erminal Bypass		0	0	C	0.00	*		0.00	*			U	0.0
						*			*	20.041	-76,1	3 <i>4</i> '	100.0
rand Total==>	62,747	0	0	105,774	100.00	*	53,20	6 100.00	*	-20,943	-70,1	J	100.0
		coo	LING COIL SI	ELECTION							AREAS		
Total (apacity		Coil Airfl		ing DB/WB			g DB/WB/HR		Gross Total	Glass	(sf)	(%)
(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F De	eg F Gra	ins	Deg F De	g F Grains		floor 4	1,216		
in Clg 17.3	207.3	149.2	8,080	74.2	6.5 9	0.5	65.3 5	8.6 66.6		Part	150		
x Clg 0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0 0.0		ExFlr	84		
ot Vent 0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0 0.0		Roof	0		0
otals 17.3	207.3									Wall	841	12	:0
		EGETON		A	TRELOWS (cfm)		ENGINEER	ING	CHECKS	TEMPERAT	URES	(F)-
HEATING			Lvg	Туре	Cooling	-	Heating	Clg % OA		10.0	Type	Clg	Ħt
Capacity			_	Vent	808		808	Clg Cfm/Sq	ft	1.92	SADB	65.8	74
(Mbh)				Infil	97		97	Clg Cfm/To		467.73	Plenum	72.0	72
ain Htg -96. ux Htg 0.				Supply	8,080		8,080	Clg Sqft/T		244.05	Return	72.0	72
		0 0.0		Mincfm	0,000		0	Clg Btuh/S			Ret/OA	74.2	65
-	и А.	080 65.1	65.3	MITHER	,			-				72.0	72
reheat -0.				Return	8.080)	8,080	No. People		15	Runarnd	, 2 0	
reheat -0.	0	0 0.0		Return	8,080		8,080 808	No. People Htg % OA			Fn MtrTD	0.1	
reheat -0.	o o		0.0	Return Exhaust Rm Exh	808		8,080 808 0	No. People Htg % OA Htg Cfm/Sq		10.0			0

4 Block TABVAV - TERMINAL AIR BLENDER VAV System

Peaked at	Time	>	Mo/Hr:	7/15			*	Mo/		7/15 *		Mo/Hr: 13		
Outside A	ir ==>	OAD	B/WB/HR:	94/ 78/124.0	1		*	OA	DB:	94 *		OADB:	3	
		Space	Ret. Air	Ret. Air	Net	Percnt		Sp	ace	Percnt *	Space Pe	ak Coil P	eak	Percnt
	s	ens.+Lat.	Sensible	Latent	Total			Sensi	ble	Of Tot *	Space Se	ns Tot S	ens	Of Tot
Envelope		(Btuh)	(Btuh)	(Btuh)	(Btuh)		*	(Bt	uh)	(%) *	(Btu	ih) (Bt	uh)	(%)
Skylite		0	0	•	` .				0	0.00 *		0	0	0.00
Skylite		0	0		С	0.00	*		0	0.00 *		0	0	0.00
Roof Co		64,378	0		64,378			64,	378	17.54 *	-114,7	83 -114,	783	41.12
Glass S		14,768	0		14,768		*	14,	768	4.02 *		0	0	0.0
Glass C		7,033	0		7,033		*	7,	033	1.92 *	-23,3	58 -23,	358	8.3
Wall Co		30,063	0		30,063		*	30,	063	8.19 *	-72,0	126 -72,	626	25.8
Partiti		0	-		. 0		*		0	0.00 *		0	0	0.0
Exposed		0			c				0	0.00 *	-18,8	199 -18,	899	6.7
Infiltr		67,202			67,202	11.06	*	24,	113	6.57 *	-75,6	28 -75,	628	27.1
Sub Tot		183,444	О		183,444			140,	356	38.25 *	-304,6	94 -304,	694	109.1
Internal		103,444	_		- ,		*			*				
Lights	Dogue	189,087	0		189,087	31.11	. *	189,	087	51.52 *		0	0	0.0
-		27,000	·		27,000		*	9,	900	2.70 *		0	0	0.0
People		27,646	0	0	27,646				646	7.53 *		О	0	0.0
Misc			0		243,733			226,		61.75 *		0	0	0.0
Sub Tot		243,733	0		243,73			,	0	0.00 *		0	0	0.0
Ceiling L		0	0		154,330				0	0.00 *		0	0	0.0
Outside A		0	U	· ·	26,279				_	0.00 *		25,	577	-9.1
Sup. Fan					20,2,1					0.00 *			0	0.0
Ret. Fan			C		,					0.00 *			0	0.0
Duct Heat	_	_	C	,		0.00			0	0.00 *		0	0	0.0
OV/UNDR S	-	0	_						Ü	0.00 *			С	0.0
Exhaust E			C		(0.00 *			0	0.0
Terminal	Bypass		c	0	,	-0.00	*			*				
Grand Tot	al==>	427,178	C	0	607,786	100.00	*	366,	,989	100.00 *	-304,6	594 -279	118	100.0
			coc	LING COIL S	ELECTION							AREAS-		
	Total	Capacity	Sens Cap.	Coil Airfl	Enter:	ing DB/W	HR	Leav	/ing [B/WB/HR	Gross To		ss (sf	(%)
	(Tons)	(Mbh)	(Mbh)	(cfm)	Deg F De	g F Gr	ains	Deg F	Deg 1	Grains	Floor	26,557		
Main Clg	50.7	607.9	448.7	19,450	74.7	52.4	59.1	53.0	51.4		Part	10,800		
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0		ExFlr	415		_
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.	0.0	Roof	24,109	_	0
Totals	50.7	607.9									Wall	7,380	5	568
	HEATIN	G COIL SELE	CTION		A	IRFLOWS	(cfm)		<u></u> .	-ENGINEERING	CHECKS	TEMPER	ATURES	5 (F)
	Capacit			Lvg	Type	Coolin	g	Heating	C	lg % OA	12.2	Type	Clg	Htg
	(Mbh)	-		Deg F	Vent	2,37	0	0	C	lg Cfm/Sqft	0.73	SADB	54.2	2 87.
Main Etg	-363.				Infil	1,03		1,032	C.	lg Cfm/Ton	383.94	Plenum	72.0	72.
Aux Etg	0.		0 0.0		Supply	19,45		18,930	C.	lg Sqft/Ton	524.24	Return	72.0	
Preheat	-0.				Mincfm		0	О	C	lg Btuh/Sqft	22.89	Ret/OA	74.7	7 3.
Reheat	-0.		0 0.0		Return	19,45	0	0	N	o. People	36	Runarnd	72.0	0 72.
Bumidif	0.		0 0.0		Exhaust	2,37	0	0	H	tg % OA	0.0	Fn MtrTD	0.3	3 0.
Opt Vent	0.		0 0.0		Rm Exh		D	0	н	tg Cfm/SqFt	0.71	Fn BldTD	0.2	2 0.
rotal	-363.				Auxil		0	0		tg Btuh/SqFt	-13.68	Fn Frict	0.7	7 0.

MAIN SYSTEM COOLING - ALTERNATIVE 1
BLDG 5265 BASERUN - FT LEONARD WOOD

PEAK COOLING LOADS ----- (Main System)

						Space							Coil		
		Peak	OA	Rm	Supp.	Space	Space	Space	Peak	OA	Rm	Supp.	Coil	Coil	Coil
		Time	Cond.	Dry	Dry	Air	Sens.	Lat.	Time	Cond.	Dry	Dry	Air	Sens.	Lat.
Room	J	Mo/Hr	DB/WB	Blb	Bulb	Flow	Load	Load	Mo/Hr	DB/WB	Blb	Bulb	Flow	Load	Load
Number	Description		(F)	(F)	(F)	(Cfm)	(Btuh)	(Btuh)		(F)	(F)	(F)	(Cfm)	(Btuh)	(Btuh)
_	cov water abute	7/15	94 78	72	65.8	8,080	53,206	9,541	7/15	94 7	8 72	65.8	8,080	76,107	29,668
3	GEN MAINT ADMIN					8,080	53,206	9,541		94 7	8 72	65.8	8,080	76,107	29,668
Zone	3 Total/Ave.		94 78			8,080	53,206	9,541	7/15	94 7	B 72	65.8	8,080	76,107	29,668
Zone	3 Block	7/15	94 78			•	53,206	9,541	.,	-	8 72		8,080	76,107	29,668
System	3 Total/Ave.		94 78			8,080	•	9,541	7/15		8 72		8,080	76,107	29,668
System	3 Block	7/15	94 78			8,080	53,206		7/15		8 72		19,450	448,644	159,142
6	GEN MAINT ADMIN	7/15	94 78	72	54.2	23,700	447,186	60,189	1/13				•	•	159,142
Zone	6 Total/Ave.		94 78	72	54.2	23,700	447,185	60,189		94 7	8 72	54.2	19,450	448,644	•
		7/15	94 78	72	54.2	23,700	447,186	60,189	7/15	94 7	8 72	54.2	19,450	448,644	159,142
Zone	6 Block					•	•	60,189		94 7	8 72	54.2	19,450	448,644	159,142
System	4 Total/Ave.		94 78	72	54.2	23,700	447,186						19,450	448,644	159,142
System	4 Block	7/15	94 76	72	54.2	19,450	366,989	60,189	7/15	94 7	8 72	34.2	13,430	110,011	

MAIN SYSTEM HEATING - ALTERNATIVE 1
BLDG 5265 BASERUN - FT LEONARD WOOD

(Main System)

													Coil -		
				0.7		Ran	- Space Supp.	Space	Space	Peak	OA	Rm	Supp.	Coil	Coil
			Peak	Cond		rw ry	Dry	Air	Sens.	Time	Cond.	Dry	Dry	Air	Sens.
		Floor	Time	DB/WI		1 y 1 b	Bulb	Flow	Load	Mo/Hr	DB/WB	Blb	Bulb	Flow	Load
Room		Area	Mo/Hr		_	F)	(F)	(Cfm)	(Btuh)		(F)	(F)	(F)	(Cfm)	(Btuh)
Number	Description	(Sq Ft)		(F) (F)	(-,	(/	•						
		19,255	13/ 1	3	1	70	93.4	79,100	-1,966,566	13/ 1	3	1 70	93.4	•	-1,966,566
1	GEN MAINT BAYS	19,255	13/ 1	3	_	70	93.4	79,100	-1,966,566		3	1 70	93.4		-1,966,566
Zone	1 Total/Ave.	19,255	13/ 1	3	_	70	93.4	79,100	-1,966,566	13/ 1	3	1 70	93.4	•	-1,966,566
Zone	1 Block	8,520	13/ 1	3	_	70	84.5	59,261	-912,397	13/ 1	3	1 70	84.5	59,261	-912,397
4	GEN MAINT BAYS	8,520	13, 1	3		70	84.5	59,261	-912,397		3	1 70		59,261	-912,397
Zone	4 Total/Ave.	8,520	13/ 1	_	1	70	84.5	59,261	-912,397	13/ 1	3	1 70		59,261	-912,397
Zone	4 Block 1 Total/Ave.	27,775	15, -	3	1	70	89.6	138,361	-2,878,963		3	1 70			-2,878,963
System		27,775	13/ 1	3	1	70	89.6	138,361	-2,878,963	13/ 1	3	1 70			-2,878,963
System	1 Block	65,268	13/ 1		1	70	73.8	83,900	-341,970	13/ 1	3	1 70		•	-2,792,256
2	GEN MAINT SHOP	65,268	13, 1	3	1	70	73.8	83,900	-341,970		3	1 70	73.8		-2,792,256
Zone	2 Total/Ave.	65,268	13/ 1		1	70	73.8	83,900	-341,970	13/ 1	3	1 70	73.8		-2,792,256
Zone	2 Block		13/ 1	_	1	70	80.4	83,550	-922,560	13/ 1	. 3	1 70	80.4	•	-5,797,537
5	GEN MAINT SHOP	75,060	13/ 1	. 3	1	70	80.4	83,550	-922,560		3	1 70	80.4	•	-5,797,537
Zone	5 Total/Ave.	75,060	13/ 1	_	_	70	80.4	83,550	-922,560	13/ 1	. 3	1 70	80.4		-5,797,537
Zone	5 Block	75,060	13/ 1	. 3	1	70	77.1		-1,264,531		3	1 70	77.1	· · · · · · · · · · · · · · · · · · ·	-8,589,792
System	2 Total/Ave.	140,328			1	70	77.1		-1,264,531	13/ 1	. 3	1 70	77.1	167,450	-8,589,792
System	2 Block	140,328	13/ 1	_	1		74.4	8,080				1 7	2 74.4	8,080	
3	GEN MAINT ADMIN	4,216	13/ 3	. 3	1		74.4	8,080			3	1 7	2 74.4	8,080	
Zone	3 Total/Ave.	4,216		_	1			8,080		13/ 1	L 3	1 7	2 74.4	8,080	
Zone	3 Block	4,216	13/		1	72		8,080			3	1 7	2 74.4	8,080	
System	3 Total/Ave.	4,216			_	72		8,080			1 3	1 7	2 74.4	8,080	
System	3 Block	4,216	13/		1			18,930	· ·		1 3	1 7	2 67.2	18,930	-293,925
6	GEN MAINT ADMIN	26,557	13/		1			18,930		*	3	1 7	2 87.2	18,930	-293,925
Zone	6 Total/Ave.	26,557		3	1			18,930			1 3	1 7	2 87.2	18,930	-293,925
Zone	6 Block	26,557	13/		1			18,930	•		3	1 7	2 87.2	18,930	-293,925
System	4 Total/Ave.	26,557			1	72		18,930			1 3	1 7	2 87.2	18,930	-293,925
System	4 Block	26,557	13/	1 3	1	72	87.2	10,93	, 304,03						

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

[At time of Coil Peak)

Room Number	Description	Lights Room Sensible (Btuh)	Lights Ret. Air Lites Sensible CLF (Btuh)	People Sensible (Btuh)	People Peopl Latent CLF (Btuh)	Misc. Space Sensible (Btuh)	Misc. Space Latent (Btuh)	Misc. Ret. Air Misc. Sensible CLF (Btuh)	Total
		01 015	0 1.000	4,125	7,125 1.000	11,725	0	0 0.560	44,190
3	GEN MAINT ADMIN	21,215	0 1.000	4,125	7,125 1.000	11,725	0	0 0.560	44,190
Zone	3 Total/Ave.	21,215		4,125	7,125 1.000	11,725	0	0 0.560	44,190
Zone	3 Block	21,215	0 1.000	•	7,125 1.000	11,725	0	0 0.560	44,190
System	3 Total/Ave.	21,215	0 1.000	4,125	•	11,725	C	0 0.560	44,190
System	3 Block	21,215	0 1.000	4,125	7,125 1.000		0	0 0.570	243,733
6	GEN MAINT ADMIN	189,087	0 1.000	9,900	17,100 1.000	27,646	0	0 0.570	243,733
Zone	6 Total/Ave.	189,087	0 1.000	9,900	17,100 1.000	27,646		0 0.570	243,733
Zone	6 Block	189,087	0 1.000	9,900	17,100 1.000	27,646	0		-
	4 Total/Ave.	189,087	0 1.000	9,900	17,100 1.000	27,646	0	0 0.570	243,733
System System	4 Block	189,087	0 1.000	9,900	17,100 1.000	27,645	0	0 0.570	243,733

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

_____INTERNAL COOLING LOADS ------(At time of Space Peak)

Room Number	Description	Lights Room Sensible (Btuh)	Lights Ret. Air Lites Sensible CLF (Btuh)	People Sensible (Btuh)	People Peopl Latent CLF (Btuh)	Misc. Space Sensible (Btuh)	Misc. Space Latent (Btuh)	Misc. Ret. Air Misc. Sensible CLF (Btuh)	Total
_		21,215	0 1.000	4,125	7,125 1.000	11,725	0	0 0.560	44,190
3	GEN MAINT ADMIN	•	0 1.000	4,125	7,125 1.000	11,725	0	0 0.560	44,190
Zone	3 Total/Ave.	21,215	0 1.000	4,125	7,125 1.000	11,725	0	0 0.560	44,190
Zone	3 Block	21,215	0 1.000	4,125	7,125 1.000	11,725	0	0 0.560	44,190
System	3 Total/Ave.	21,215		4,125	7,125 1.000	11,725	0	0 0.560	44,190
System	3 Block	21,215	0 1.000	•	17,100 1.000	27,646	0	0 0.570	243,733
6	GEN MAINT ADMIN	189,087	0 1.000	9,900	17,100 1.000	27,646	0	0 0.570	243,733
Zone	6 Total/Ave.	189,087	0 1.000	9,900		27,646	0	0 0.570	243,733
Zone	6 Block	189,087	0 1.000	9,900	17,100 1.000	27,646	0	0 0.570	243,733
System	4 Total/Ave.	189,087	0 1.000	9,900	17,100 1.000	•	0	0 0.570	243,733
System	4 Block	189,087	0 1.000	9,900	17,100 1.000	27,646	U	0 0.370	

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

BUILDING ENVELOPE COOLING LOADS -----

(Roof - Skylight) (At time of Coil Peak)

Room Number		Description	Roof Return Air Sensible Load (Btuh)	Roof R.A. CLTD (F)	Roof Space Sensible Load (Btuh)	Roof Space CLTD (F)	Skylight Return Air Solar (Btuh)	Skylight Space Solar (Btuh)	Skylt Solar CLF	Skylight Return Air Conduction Load (Btuh)	Skylt R.A. CLTD (F)	Skylight Space Conduction Load (Btuh)	Skylt Space CLTD (F)
3	amu k	NIMDA TRIA	0	0.0	0	0.0	0	0	0.000	0	0.0	0	0.0
			0	0.0	0	0.0	0	0	0.000	0	0.0	O	0.0
Zone		Total/Ave.	0	0.0	0	0.0	0	0	0.000	0	0.0	0	0.0
Zone	3		0	0.0	0	0.0	0	0	0.000	0	0.0	0	0.0
System		Total/Ave.		0.0	0	0.0	0	0	0.000	0	0.0	0	0.0
System	3		0		-	38.7	0	0	0.000	0	0.0	0	0.0
6		MAINT ADMIN	0	0.0	64,378		0		0.000	0	0.0	0	0.0
Zone	6	Total/Ave.	0	0.0	64,378	38.7			0.000	0	0.0	0	0.0
Zone	6	Block	0	0.0	64,378	38.7	0			_	0.0	0	0.0
System	4	Total/Ave.	0	0.0	64,378	38.7	0		0.000	0			
System	4	Block	0	0.0	64,378	38.7	0	0	0.000	0	0.0	0	0.0

BUILDING ENVELOPE COOLING LOADS-----

(Wall - Window)

(At time of Coil Peak)

Room Number	Description	Wall Plenum Load (Etuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)		Glass Space Conduction (Etuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
3	GEN MAINT ADMIN	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
Zone	3 Total/Ave.	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
Zone	3 Block	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
System	3 Total/Ave.	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
System	3 Block	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
-	GEN MAINT ADMIN	0	0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
Zone	6 Total/Ave.	0	0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
Zone	6 Block	0	0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
System	4 Total/Ave.	0	0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
System	4 Block	0	0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0

BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Etuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Etuh)	Envelope Total (Btuh)
3	GEN MAINT ADMIN	0	0.0	0	0.0	97	2,266	2,416	72.0	0	17,954
Zone	3 Total/Ave.	0	0.0	o	0.0	97	2,266	2,416	72.0	0	17,954
Zone	3 Block	0	0.0	0	0.0	97	2,266	2,416	72.0	0	17,954
	3 Total/Ave.	0	0.0	0	0.0	97	2,266	2,416	72.0	0	17,954
System System	3 Block	0	0.0	0	0.0	97	2,266	2,416	72.0	0	17,954

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

_____BUILDING ENVELOPE COOLING LOADS ----(Exposed Ploor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	-	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				0	0.0	1,032	24,113	43,089	72.0	0	183,444
6	GEN MAINT ADMIN	0	0.0			1,032	24,113	43,089	72.0	0	183,444
Zone	6 Total/Ave.	О	0.0	0			-	43,089	72.0	0	183,444
Zone	6 Block	0	0.0	0	0.0	1,032	24,113	•		0	183,444
System	4 Total/Ave.	0	0.0	0	0.0	1,032	24,113	43,089	72.0		•
System	4 Block	0	0.0	0	0.0	1,032	24,113	43,089	72.0	0	183,444

COOLING LOADS AT SPACE PEAR - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

(Roof - Skylight)

(At time of Space Peak)

Room Number		Description	Roof Return Air Sensible Load (Btuh)	Roof R.A. CLTD (F)	Roof Space Sensible Load (Etuh)	Roof Space CLTD (F)	Skylight Return Air Solar (Etuh)	Skylight Space Solar (Btuh)	Skylt Solar CLF	Skylight Return Air Conduction Load (Btuh)	Skylt R.A. CLTD (F)	Skylight Space Conduction Load (Btuh)	Skylt Space CLTD (F)
					0	0.0	0	0	0.000	o	0.0	0	0.0
3	GEN P	MAINT ADMIN	0	0.0			0	0	0.000	0	0.0	0	0.0
Zone	3	Total/Ave.	0	0.0	0		0		0.000	0	0.0	0	0.0
Zone	3	Block	0	0.0	0					0	0.0	0	0.0
System	3	Total/Ave.	0	0.0	0	0.0	0		0.000	0	0.0	o	0.0
-		Block	О	0.0	0	0.0	0		0.000	-		0	
System	_		0	0.0	64,378	38.7	0	0	0.000	0	0.0		
6		MAINT ADMIN	_	0.0	64,378	38.7	0	0	0.000	0	0.0	0	0.0
Zone	5	Total/Ave.			•		0	0	0.000	0	0.0	0	0.0
Zone	6	Block	0	0.0	64,378		0	0	0.000	0	0.0	0	0.0
System	4	Total/Ave.	0	0.0	64,378					0	0.0	o	0.0
System	4	Block	0	0.0	64,378	38.7	0	O	0.000	v	0.0		

------BUILDING ENVELOPE COOLING LOADS------

(Wall - Window)

(At time of Space Peak)

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)	Glass Solar CLF	Glass Space Conduction (Etuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Etuh)	Glass R.A. CLTD (F)
		0	0.0	3,265	44.4	8,520	0	0.580	1,485	21.8	0	0.0
3	GEN MAINT ADMIN	0	0.0	3,265	44.4	8,520	0	0.580	1,485	21.8	0	0.0
Zone	3 Total/Ave.	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
Zone	3 Block	0	0.0	3,265	44.4	8,520	0	0.580	1,485	21.8	0	0.0
System	3 Total/Ave.	0	0.0	3,265	44.4	8,520	0	0.580	1,486	21.8	0	0.0
System	3 Block	0	0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
6			0.0	30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
Zone	6 Total/Ave.	0		30,063	28.8	14,768	0	0.530	7,033	21.8	0	0.0
Zone	6 Block	0		30,063	28.8	14,768	О	0.530	7,033	21.8	0	0.0
System System	4 Total/Ave. 4 Block	0	0.0	30,063	28.8	14,768	0		7,033	21.8	0	0.0

------BUILDING ENVELOPE COOLING LOADS-----

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)		Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				0	0.0	97	2,266	2,416	72.0	0	17,954
3	GEN MAINT ADMIN	0	0.0	0		97	2,266	2,416	72.0	0	17,954
Zone	3 Total/Ave.	0	0.0			97	2,266	2,416	72.0	0	17,954
Zone	3 Block	0	0.0	0		97	2,266	2,416	72.0	o	17,954
System	3 Total/Ave.	0	0.0	0			2,266	2,416	72.0	0	17,954
System	3 Block	0	0.0	0	0.0	97	2,200	2,410			

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

COOLING LOADS AT SPACE PEAK - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
		_		0	0.0	1,032	24,113	43,089	72.0	0	183,444
6	GEN MAINT ADMIN	0	0.0	-	-	•	24,113	43,089	72.0	0	183,444
Zone	6 Total/Ave.	0	0.0	0	0.0	1,032		43,089	72.0	0	183,444
Zone	6 Block	0	0.0	0	0.0	1,032	24,113			0	183,444
	4 Total/Ave.	0	0.0	0	0.0	1,032	24,113	43,089	72.0		-
System System	4 Block	0		0	0.0	1,032	24,113	43,089	72.0	0	183,444

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

Roof - Skylight)

(At time of Coil Peak)

							skylight					
		Roof		Roof					Skylight		Space	Skylt
		Return Air	Roof	Space	Roof	s kylight	Skylight		Return Air		Conduction	Space
		Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Load	CLTD
		Load	CLTD	Load	CLTD	solar	Solar	CLF	Load	CLID	(Btuh)	(F)
Room	Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Bean)	(2)
Number	Description	(200)		·							0	0.0
		0	0.0	-92,104	-67.0	0	0	0.000	0	0.0	0	0.0
		0	0.0	-92,104		0	0	0.000	0	0.0	0	0.0
Zone	1 Total/Ave.	0	0.0	-92,104		0	0	0.000	0	0.0	0	0.0
Zone	1 Block	0	0.0	-39,388		0	0	0.000	0	0.0	-	0.0
4	GEN MAINT BAYS	0	0.0	-39,388	-67.0	0	0	0.000	0	0.0	0	
Zone	4 Total/Ave.	0	0.0	-39,388	-67.0	0	0	0.000	0	0.0	0	0.0
Zone	4 Block	0	0.0	-131,492	-67.0	0	0	0.000	o	0.0	0	0.0
System	1 Total/Ave.	0	0.0	-131,492	-67.0	0	0	0.000	0	0.0	0	0.0
System	1 Block	_	0.0	-299,570	-67.0	0	0	0.000	0	0.0	0	
2	GEN MAINT SHOP	0	0.0	-299,570	-67.0	0	0	0.000	0	0.0	0	
Zone	2 Total/Ave.	0		-299,570	-	0	0	0.000	0	0.0	0	
Zone	2 Block	0	0.0		-67.0	0	0	0.000	O	0.0	0	0.0
5	GEN MAINT SHOP	0	0.0	-337,558		0	0	0.000	c	0.0	C	0.0
Zone	5 Total/Ave.	0		-337,558		0	0	0.000		0.0	c	0.0
Zone	5 Block	0	0.0	-337,558		_	- c			0.0	C	0.0
System	2 Total/Ave.	0	0.0	-637,128		_	c			0.0	(0.0
System	2 Block	0	0.0	-637,128		_				0.0		0.0
3	GEN MAINT ADMIN	0	0.0	0		_	,			0.0	(0.0
Zone	3 Total/Ave.	. 0	0.0	0		_		0.000		0.0	. (0.0
Zone	3 Block	0	0.0	0		_		0.000		0.0	, (0.0
System	3 Total/Ave.	. 0	0.0	0	0.0		·-		,	0.0		0.0
System	3 Block	C	0.0	a	0.0				,	0 0.0		0.0
- 6	GEN MAINT ADMIN	c	0.0	-114,783	-69.0			0.000	•	0 0.0		0.0
Zone	6 Total/Ave		0.0	-114,783	-69.0			0.000	•	0 0.0		0.0
Zone	6 Block	c	0.0	-114,783	-69.0			0.00	•	0 0.0		0.0
System	4 Total/Ave		0.0	-114,783	-69.0			0.00	•	0 0.0	•	0.0
System			0.0	-114,783	-69.0	0	'	0.00	υ	0 0.0	•	
51556												

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Etuh)		Glass Space Conduction (Etuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	R.A. CLTD (F)
				-455,638	-67.0	0	0	0.000	-137,920	-67.0	0	0.0
1	GEN MAINT BAYS	0	0.0	•		0		0.000	-137,920	-67.0	0	0.0
Zone	1 Total/Ave.	0	0.0	-455,638		0	_	0.000	-137,920	-67.0	0	0.0
Zone	1 Block	0	0.0	-455,638				0.000	-51,111		0	0.0
4	GEN MAINT BAYS	0	0.0	-238,223	-67.0	0		0.000	-51,111		0	0.0
Zone	4 Total/Ave.	0	0.0	-238,223	-67.0	0					o	0.0
Zone	4 Block	0	0.0	-238,223	-67.0	0		0.000	•		0	
	1 Total/Ave.	0	0.0	-693,860	-67.0	0		0.000	-189,031		0	
System		0	0.0	-693,850	-67.0	0	0	0.000	-189,031			
System 2	1 Block GEN MAINT SHOP	0		-12,485		0	0	0.000	-11,855	-67.0	0	0.0

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS -----

(Wall - Window)

(At time of Coil Peak)

		Wall	Wall	Wall	Wall	Glass	Glass	Glass		Glass	Glass	Glass R.A.
		Plenum	Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	CLTD
		Load	CLTD	Load	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	
Room	Description	(Btuh)	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Description	(202)	ν-,	•	•						_	
		0	0.0	-12,486	-67.0	0	0	0.000	-11,855	-67.0	0	0.0
Zone	2 Total/Ave.	0	0.0	-12,486		0	0	0.000	-11,855	-67.0	0	0.0
Zone	2 Block	0	0.0	-199,530		0	0	0.000	-180,166	-67.0	0	0.0
5	GEN MAINT SHOP	0	0.0	-199,530		0	0	0.000	-180,166	-67.0	0	0.0
Zone	5 Total/Ave.	0	0.0	-199,530		0	0	0.000	-180,166	-67.0	0	0.0
Zone	5 Block	_	0.0	-212,016		0	0	0.000	-192,021	-67.0	0	0.0
System	2 Total/Ave.	0		-212,016	•	0	0	0.000	-192,021	-67.0	0	0.0
System	2 Block	0		-5,074		0	c	0.000	-4,935	-69.0	0	0.0
3	GEN MAINT ADMIN	0		•		0	0	0.000	-4,935	-69.0	0	0.0
Zone	3 Total/Ave.	0		-5,074		0	-		-4,935	-69.0	0	0.0
Zone	3 Block	0		-5,074	*	0		0.000	-4,935	-69.0	0	0.0
System	3 Total/Ave.	0		-5,074		0			-4,935		0	0.0
System	3 Block	0		-5,074					-23,358		0	0.0
6	GEN MAINT ADMIN	0	0.0	-72,026		0	_		-23,358		0	0.0
Zone	6 Total/Ave.	0	0.0	-72,026		0					0	0.0
Zone	6 Block	0	0.0	-72,026		0	_				_	0.0
System	4 Total/Ave.	C	0.0	-72,026	-69.0	C					_	-
System		C	0.0	-72,026	-69.0	c	, d	0.000	-23,358	-09.0	,	0.0

------BUILDING ENVELOPE HEATING LOADS-----

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
1	GEN MAINT BAYS	-41,390	-67.0	0	0.0	17,419	-1,239,515	0	70.0	0	-1,966,566
_	1 Total/Ave.	-41,390	-67.0	0	0.0	17,419	-1,239,515	0	70.0	0	-1,966,566
Zone Zone	1 Block	-41,390	-67.0	0	0.0	17,419	-1,239,515	0	70.0	0	-1,966,566
Zone	GEN MAINT BAYS	-17,821	-67.0	0	0.0	7,952	-565,855	0	70.0	0	-912,397
Zone	4 Total/Ave.	-17,821	-67.0	0	0.0	7,952	-565,855	0	70.0	0	-912,397
Zone	4 Block	-17,821	-67.0	0	0.0	7,952	-565,855	0	70.0	0	-912,397
System	1 Total/Ave.	-59,211	-67.0	0	0.0	25,371	-1,805,369	0	70.0	0	-2,878,963
System	1 Block	-59,211	-67.0	0	0.0	25,371	-1,805,370	0	70.0	0	-2,878,963
2	GEN MAINT SHOP	-2,830	-67.0	0	0.0	214	-15,228	0	70.0	0	-341,970
Zone	2 Total/Ave.	-2,830	-67.0	0	0.0	214	-15,228	0	70.0	0	-341,970
Zone	2 Block	-2,830	-67.0	0	0.0	214	-15,228	0	70.0	0	-341,970
5	GEN MAINT SHOP	-34,668	-67.0	0	0.0	2,398	-170,639	0		0	-922,560
Zone	5 Total/Ave.	-34,668	-67.0	0	0.0	2,398	-170,639	0		0	-922,560
Zone	5 Block	-34,668		0	0.0	2,398	-170,639	0		0	-922,560
System	2 Total/Ave.	-37,499	-67.0	0	0.0	2,612	-185,867	0		0	-1,264,531
System	2 Block	-37,499		0	0.0	2,612	-185,867	0		0	-1,264,531
3	GEN MAINT ADMIN	-3,825		0	0.0	97	-7,108	0		0	-20,943
Zone	3 Total/Ave.	-3,825		o	0.0	97	-7,108	O	72.0	0	-20,943

EXATING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Etuh)	Expsd Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				_		97	-7,108	0	72.0	0	~20,943
Zone	3 Block	-3,825	-69.0	0	0.0		-7,108	0	72.0	0	-20,943
System	3 Total/Ave.	-3,825	-69.0	0	0.0	97	-	0	72.0	0	-20,943
-	3 Block	-3,825	-69.0	0	0.0	97	-7,108	_		0	-304,694
System		-18,899		0	0.0	1,032	-75,628	0	72.0		- •
6	GEN MAINT ADMIN			0	0.0	1,032	-75,628	0	72.0	0	-304,694
Zone	6 Total/Ave.	-18,899				1,032	-75,628	0	72.0	О	-304,694
Zone	6 Block	-18,899	-69.0	0		-	-75,628	0	72.0	0	-304,694
System	4 Total/Ave.	-18,899	-69.0	0	0.0	1,032			72.0	0	-304,694
System	4 Block	-18,899	-69.0	0	0.0	1,032	-75,628	0	12.0	J	,

HEATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS-----(Roof - Skylight)

(At time of Space Peak)

				(A1	t time (of Space Peak)					manual districts	
		Roof		Roof					skylight		skylight	
		Return Air	Roof	Space	Roof	Skylight	Skylight	Skylt	Return Air	Skylt	Space	Skylt -
		Sensible	R.A.	Sensible	Space	Return Air	Space	Solar	Conduction	R.A.	Conduction	Space
			CLTD	Load	CLTD	Solar	Solar	CLF	Load	CLTD	Load	CLTD
Room		Load	(F)	(Btuh)	(F)	(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Description	(Btuh)	(F)	(Beam)		` .						
		_		-92,104	-67.0	0	0	0.000	0	0.0	0	0.0
1	GEN MAINT BAYS	0	0.0	-92,104		0	0	0.000	0	0.0	0	
Zone	1 Total/Ave.	0	0.0	-92,104	-67.0	o	0	0.000	0	0.0	0	0.0
Zone	1 Block	0	0.0	-39,388		0	0	0.000	0	0.0	0	0.0
4	GEN MAINT BAYS	0	0.0	-39,388	-67.0	0	0	0.000	0	0.0	0	0.0
Zone	4 Total/Ave.	0	0.0		-	0	0	0.000	0	0.0	0	0.0
Zone	4 Block	0	0.0	-39,388	-67.0	0	0	0.000	0	0.0	0	0.0
System	1 Total/Ave.	0	0.0	-131,492		0	0		0	0.0	0	0.0
System	1 Block	0	0.0	-131,492		0	0		0	0.0	0	0.0
2	GEN MAINT SHOP	0	0.0	-299,570		0	0		o	0.0	0	0.0
Zone	2 Total/Ave.	0	0.0	-299,570		_	0		c	0.0	0	0.0
Zone	2 Block	0	0.0	-299,570		_	=		_		o	0.0
5	GEN MAINT SHOP	0	0.0	-337,558	-67.0		C				c	0.0
Zone	5 Total/Ave.	0	0.0	-337,558	-67.0						c	0.0
Zone	5 Block	0	0.0	-337,558	-67.0		(0.0
System	2 Total/Ave.	o	0.0	-637,128	-67.0	0	(
System	2 Block	0	0.0	-637,128	~67.0	0	(
3		0	0.0	o	0.0	0	(0.0		0.0
Zone	3 Total/Ave.	0	0.0	c	0.0	, 0	(0.000	•	0.0		0.0
Zone	3 Block	0	0.0	c	0.0	0	1	0.000	,	0.0		
	3 Total/Ave.		0.0	c	0.0	0	1	0.000)	0 0.0	•	-
System		. c	0.0	c	0.0	0		0.000)	0.0	•	0.0
System				-114,783	-69.0	0		0.00)	0 0.0	•	0.0
6				-114,783		0		0.00	0	0 0.0	•	0.0
Zone	6 Total/Ave			-114,78		0 0		0.00	ס	0 0.0	0	0.0
Zone	6 Block			-114,78		_		0.00	0	0 0.	0	0.0
System				-114,78				0.00	0	0 0.	D	0.0
System	4 Block	(0.0	-114,10.		-						

BUILDING ENVELOPE HEATING LOADS-----

(Wall - Window)

Room Number	Description	Wall Plenum Load (Btuh)	Wall Plenm CLTD (F)	Wall Space Load (Btuh)	Wall Space CLTD (F)	Glass Space Solar (Btuh)	Glass Return Air Solar (Btuh)		Glass Space Conduction (Btuh)	Glass Space CLTD (F)	Glass Return Air Conduction (Btuh)	Glass R.A. CLTD (F)
Zone Zone	GEN MAINT BAYS 1 Total/Ave. 1 Block	0 0 0	0.0 0.0 0.0	-455,638 -455,638 -455,638 -238,223	-67.0 -67.0	0 0 0	o 0	0.000 0.000 0.000	-137,920 -137,920 -137,920 -51,111	-67.0 -67.0	0 0 0	0.0 0.0 0.0
Zone Zone System System 2	GEN MAINT BAYS 4 Total/Ave. 4 Block 1 Total/Ave. 1 Block GEN MAINT SHOP	0 0	0.0 0.0 0.0 0.0	-238,223 -238,223 -693,860 -693,860 -12,486	-67.0 -67.0 -67.0 -67.0	0 0 0 0	0	0.000	-51,111 -51,111 -189,031 -189,031 -11,855	-67.0 -67.0 -67.0	0 0 0 0	0.0 0.0 0.0

BEATING LOADS AT SPACE PEAK - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

(At time of Space Peak)

				11	Wall	Wall	Glass	Glass	Glass	Glass	Glass	Glass	Glass
			Wall	Wall Plenm	Space	Space	Space	Return Air	Solar	Space	Space	Return Air	R.A.
			Plenum		Poeq	CLTD	Solar	Solar	CLF	Conduction	CLTD	Conduction	CLTD
Room			Load	CLTD			(Btuh)	(Btuh)		(Btuh)	(F)	(Btuh)	(F)
Number	Descr	iption	(Btuh)	(F)	(Btuh)	(F)	(BCuir)	(200)		•			
			_	0.0	-12,485	-67.0	0	0	0.000	-11,855	-67.0	0	0.0
Zone	_	Total/Ave.	0		•		0	0	0.000	-11,855	-67.0	0	0.0
Zone	_	Block	0	0.0	-12,486		0	0	0.000	-180,166	-67.0	0	0.0
5		AINT SHOP	0	0.0	-199,530		0	0	0.000	-180,166	-67.0	0	0.0
Zone	5	Total/Ave.	0	0.0	-199,530		0	0	0.000	-180,166	-67.0	0	0.0
Zone	5	Block	0	0.0	-199,530		0	0	_	-192,021		0	0.0
System	2	Total/Ave.	, 0	0.0	-212,016		_	0		-192,021	-67.0	0	0.0
System	2	Block	0	0.0	-212,016	-67.0	0	-		-4,935		0	0.0
3	GEN N	MAINT ADMIN	0	0.0	-5,074	-69.0	0	0		-4,935		0	0.0
Zone	3	Total/Ave.	0	0.0	-5,074	-69.0	0	0				0	0.0
Zone	3	Block	0	0.0	-5,074	-69.0	0	o		-4,935		0	
	3		0	0.0	-5,074	-69.0	0	0	0.000	-4,935			
System	3		0	0.0	-5,074	-69.0	0	0	0.000	-4,935			
System	-		0		-72,026		0	0	0.000	-23,358	-69.0	0	
6		MAINT ADMIN	0		-72,026		0	0	0.000	-23,358	-69.0	0	0.0
Zone		Total/Ave.	=		-72,026		0	0	0.000	-23,358	-69.0	0	0.0
Zone	6	Block	0		-72,026		0	_	0.000	-23,358	-69.0		0.0
System	4	Total/Ave.	0		•		c		0.000	-23,358	-69.0		0.0
System	4	Block	0	0.0	-72,026	-09.0			-,	·			

BUILDING ENVELOPE HEATING LOADS-----

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expsd Floor CLTD (F)	Partition Sensible (Etuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
1	GEN MAINT BAYS	-41,390	-67.0	0	0.0	17,419	-1,239,515	0	70.0	0	-1,966,566
Zone	1 Total/Ave.	-41,390		0	0.0	17,419	-1,239,515	0	70.0	О	-1,966,566
	1 Block	-41,390	-67.0	0	0.0	17,419	-1,239,515	0	70.0	0	-1,965,566
Zone 4	GEN MAINT BAYS	-17,821	-67.0	0	0.0	7,952	-565,855	0	70.0	0	-912,397
	4 Total/Ave.	-17,821	-67.0	0	0.0	7,952	-565,855	0	70.0	0	-912,397
Zone	4 Block	-17,821	-67.0	0	0.0	7,952	-565,855	0	70.0	0	-912,397
Zone	1 Total/Ave.	-59,211	-67.0	0	0.0	25,371	-1,805,369	0	70.0	0	-2,878,963
System	1 Block	-59,211	-67.0	0	0.0	25,371	-1,805,370	0	70.0	0	-2,878,963
System 2	GEN MAINT SHOP	-2,830	-67.0	o	0.0	214	-15,228	0	70.0	0	-341,970
Zone	2 Total/Ave.	-2,830		0	0.0	214	-15,228	0	70.0	О	-341,970
Zone	2 Block	-2,830		o	0.0	214	-15,228	0	70.0	0	-341,970
20ne 5	GEN MAINT SEOP	-34,668		0	0.0	2,398	-170,639	0	70.0	0	-922,560
-	5 Total/Ave.	-34,668	-67.0	0	0.0	2,398	-170,639	0	70.0	0	-922,560
Zone	5 Block	-34,668		0	0.0	2,398	-170,639	0	70.0	0	-922,560
Zone		-37,499		o	0.0	2,612	-185,867	0	70.0	0	-1,264,531
System	_ '	-37,499		0		2,612	-165,867	0	70.0	0	-1,264,531
System	2 Block	-3,825		0		97	-7,108	0	72.0	0	-20,943
Zone	GEN MAINT ADMIN 3 Total/Ave.	-3,825		0		97	-7,108	0	72.0	0	-20,943

HRATING LOADS AT SPACE PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

------BUILDING ENVELOPE HEATING LOADS------

(Exposed Floor - Partitions - Infiltration)

Room Number	Description	Exposed Floor Sensible (Btuh)	Expad Floor CLTD (F)	Partition Sensible (Btuh)	Part. CLTD (F)	Infilt. Airflow (Cfm)	Infilt. Sensible (Btuh)	Infilt. Latent (Btuh)	Plenm Dry B Temp. (F)	Ceiling Sensible Load (Btuh)	Envelope Total (Btuh)
				0	0.0	97	-7,108	0	72.0	0	-20,943
Zone	3 Block	-3,825	-69.0			97	-7,108	0	72.0	0	-20,943
System	3 Total/Ave.	-3,825	-69.0	0	0.0		•	0	72.0	0	-20,943
System	3 Block	-3,825	-69.0	0	0.0	97	-7,108			0	-304,694
-		-18,899	-69.0	0	0.0	1,032	-75,628	0	72.0		•
6		- •		0	0.0	1,032	-75,628	0	72.0	0	-304,694
Zone	6 Total/Ave.	-18,899				1,032	-75,628	0	72.0	0	-304,694
Zone	6 Block	-18,899	-69.0	0		•		0	72.0	0	-304,694
System	4 Total/Ave.	-18,899	-69.0	0	0.0	1,032	-75,628			0	-304,694
System	4 Block	-18,899	-69.0	0	0.0	1,032	-75,628	0	72.0	v	204,000

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

-----AIRFLOW COOLING LOADS-----(At time of Coil Peak)

				Ventilation		Opti	onal Ventila	tion		- Буразв		Ov/Undr
Room	1	Description	Airflow (Cfm)	Sensible (Btuh)	Latent (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Latent (Btuh)	Airflow (Cfm)	Sensible (Etuh)	Latent (Btuh)	Sizing (Btuh)
						0	0	0	0	0	0	603
3	GEN M	AINT ADMIN	808	18,879	20,126			0	0	0	0	603
Zone	3	Total/Ave.	808	18,879	20,126	0	0	-		0	0	603
		Block	808	18,879	20,126	0	0	0	0		_	603
Zone	_			18,879	20,126		0	0	0	0	0	
System	3	Total/Ave.	808	•			0	0	0	0	0	603
System	3	Block	808	18,079	20,126	_		0		0	0	0
- 6	GEN M	AINT ADMIN	2,370	55,376	98,953	0	0			=	0	80,197
			2,370	55,376	98,953	0	0	C	0	o		•
Zone	•	Total/Ave.	•	•	98,953		0	c	0	0	0	0
Zone	6	Block	2,370	55,376	•	_	0	c	. 0	0	0	80,197
System	4	Total/Ave.	2,370	55,376	98,953	0				0	0	0
System	4	Block	2,370	55,376	98,953	0	0	C) 0	U	Ū	_

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

			17	1-+10	Op.	Vent	Re	heat	Hum	1dif	
			Airflow	Sensible		Sensible	Airflow	Sensible	Airflow	Latent	Total
Room				(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Cfm)	(Btuh)	(Btuh)
Number		escription	(Cfm) O	(Ecuil)	0	· · ·	0	0	0	0	0
1		INT BAYS	0	0	0	0	0	0	0	D	0
Zone	_	Total/Ave.	-	0	0	0	0	0	0	0	0
Zone	_	Block	0	0		0	0	C	0	0	0
4		AINT BAYS	0	0	_	0	_	C	0	0	0
Zone	-	Total/Ave.	0	0	-	c) 0	0	0
Zone	4	Block	0	0	_			, (0	0	0
System	1		0	0				, (0	0	0
System	-	Block	0	=	-	7	, ,		0 0	0	-2,490,558
2	GEN M	AINT SHOP		-2,490,558			, .		0 0	0	-2,490,558
Zone	2		•	-2,490,558			, ,		0 0	0	-2,490,558
Zone		Block		-2,490,558			, ,		0 0	0	-4,915,080
5	GEN M	AINT SHOP	-	-4,915,080					0 0	0	-4,915,080
Zone	5	Total/Ave.		-4,915,080				-	0 0	0	-4,915,080
Zone	5	Block		-4,915,080			•	=	0 0	, 0	-7,405,637
System	2	Total/Ave.		-7,405,63			•	•	- p 0	0	-7,405,637
System	2		•	-7,405,63			•	•	0 0	. 0	-59,213
3	GEN M	NIMGA TNIA	808	-59,21			•	•	0		-59,213
Zone	3	Total/Ave.	808	-59,21			•	0	•	0	-59,213
Zone	3	Block	808	-59,21			•	-	•) 0	-59,213
System	3	Total/Ave.	808	-59,21		•	-	0	•	, 0	
System	. 3	Block	808	-59,21		•	•	0	•	0	-
6	GEN 1	MAINT ADMIN	0		0 (•	0	•	o 0	
Zone	6	Total/Ave.	0		0 ()	-	0	•	o 0	_
Zone	6	Block	0		0 ()	•	0	•	•	_
System	. 4	Total/Ave.	0		0 ()	0	0	-	-	_
System	1 4	Block	0		0 ()	0	0	0	0 0	·

COOLING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

------AIRFLOW HEAT GAIN AND LOSS------(At time of Coil Peak)

Room Number		- Description	Duct Heat Pickup (Btuh)	Supply Fan Heat (Btuh)	Return Fan Heat (Btuh)	System Exhaust Heat Loss (Btuh)	Total	System Exhaust Airflow (Cfm)	Room Exhaust Airflow (Cfm)	Ducted Airflow (Cfm)	Airflow (Cfm)	Airflow (Cfm)	(Cim)	Airflow (Cfm)
				4,022	0	0	4,022	808	0	8,080	0			
3 (GEN M	AINT ADMIN	0	•	0		4,022	808	0	8,080	0	0	0	•
Zone	3	Total/Ave.	0	4,022			4,022		0	8,080	0	0	0	8,080
Zone	3	Block	0	4,022	0					8,080	0	. 0	. 0	8,080
System	3	Total/Ave.	0	4,022	0		4,022	_			_		0	8,080
System	3	Block	0	4,022	0	0	4,022			•	_	_		19,450
-	-	AINT ADMIN	0	26,279	0	0	26,279	2,370			_			19,450
6			0	26,279	0	. 0	26,279	2,370) 0	19,450		·		
Zone	6	Total/Ave.		•	0	. 0	26,279	2,370	, c	19,450				19,450
Zone	6	Block	0	26,279		_	26,279	2,370) (19,450	, () () (19,450
System	4	Total/Ave. Block	0	26,279 26,279	c		26,279	•	_	19,450	, (, () (19,450

HEATING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

_____AIRFLOW HEAT GAIN AND LOSS-----(At time of Coil Peak)

						Heating	,						
			Return	System		System	Room			Run		System	
		Supply	Fan	Exhaust		Exhaust	Exhaust	Ducted	Plenum	Around	Corridr	Return	
		Fan	Heat	Heat Loss	Total	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	Airflow	
Room		Heat	(Btuh)	(Btuh)	(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	
Number	Description	(Btuh)	(Bcun)	(20211)	,,	•							
		0	0	o	0	0	0	0	0	0	0	•	
1	GEN MAINT BAYS		0	0	0	0	0	0	0	0	0	-	
Zone	1 Total/Ave.	0	0	0	0	0		0	0	0	0		
Zone	1 Block	0	0	0	0	0			0	0	. 0	59,261	
4	GEN MAINT BAYS	0		0	0	a			0	0	0	59,261	
Zone	4 Total/Ave.	0	0	0	0	c	, () (0	C	0	59,261	
Zone	4 Block	0	0	0	0		, (, (, 0	C) 0	138,361	
System	1 Total/Ave.	0	0	-	0			, () (, c) 0	138,361	
System	1 Block	0	0	0	40,272	35,000	-	. (, (, (, (83,900	
2	GEN MAINT SHOP	40,272	0	0	40,272	35,000	-		, (, (, (83,900	
Zone	2 Total/Ave.	40,272	0	0	40,272	35,000) (, (83,900	
Zone	2 Block	40,272	0	0	•	69,07	-		D () (, (83,550	
5	GEN MAINT SHOP	40,104	0	0	40,104		_		- D ()	p (83,550	
Zone	5 Total/Ave.	40,104	0		40,104	69,07	_	_	-		0 (83,550	
Zone	5 Block	40,104	0		40,104	69,07	_	•	-		0	167,450	
System	2 Total/Ave.	80,376	0		80,376	104,07	-	•	•	_	0	0 167,450	į
System	2 Block	80,376	0		80,376	104,07	_	•	•	•	_	0 8,080	
3	GEN MAINT ADMIN	4,022	0		4,022	80	-		•	-	•	0 8,080	
Zone	3 Total/Ave.	4,022	C	0	4,022	80		•	•	-	-	0 8,080	
Zone	3 Block	4,022	c	0	4,022	80		0 8,08	-	-		0 8,080	
System	3 Total/Ave.	4,022	C) 0	4,022	80		0 8,08		0	-	0 8,080	
System	3 Block	4,022	(0	4,022	80	98	0 8,08	•		_	0 0,000	
6	GEN MAINT ADMIN	25,577	(0	25,577		0	0 18,93		0 18,93		0 (
Zone	5 Total/Ave.	. 25,577	(0	25,577		0	0 18,93		0 18,93		-	0
Zone	6 Block	25,577	(0	25,577		0	0 18,93		0 18,93			0
System		25,577	(0	25,577		0	0 18,9		0 18,93		-	0
System	4 Block	25,577	(0	25,577		0	0 18,9	30	0 18,93	30	0 (,
-,	•												

ZONE PSYCEROMETRICS - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

3 Zone

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb (F)	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	72.0	65.1	70.1	86.7	30.8	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	72.0	65.1	70.1	86.7	30.8	
Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	74.2	66.5	67.8	90.5	31.9	
Blow through Fan						0.0
Entering Coil	74.2	66.5	67.8	90.5	31.9	
Leaving Coil	65.3	62.5	86.0	84.6	28.9	
Draw Through Fan						0.2
Duct Frictional Heat						0.3
=						0.0
Supply Duct Heat Gain		T	84.6	84.6	29.0	
Cold Deck Supply Air	65.8	62.7				
Supply Air	65.8	62.7	84.6	84.6	29.0	

10.00 (%) Percent Outside Air Sensible Heat Ratio (SHR) 0.826 0.00 (%) Percent Supply Air Bypassing Coil 8,080 (Cfm) Coil Airflow

SYSTEM PSYCHROMETRICS - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

System 4

	Dry	Wet	Relat.	Humid.		Temp.
	Bulb	Bulb	Humid.	Ratio	Enthalpy	Diff.
	(F)	(F)	(%)	(GR)	(Btu/Lb)	(F)
Space	72.0	59.9	50.0	61.5	26.9	
Main System						0.0
Return Air Heat Pickup						0.0
Return Fan					26.9	0.0
Return Air	72.0	59.9	50.0	61.5		
Outdoor Air	94.0	77.6	48.8	124.0	42.1	
Return/Outdoor Air Mix	74.7	62.4	51.3	69.1	28.7	
Blow through Fan						0.0
Entering Coil	74.7	62.4	51.3	69.1	28.7	
Leaving Coil	53.0	51.5	91.3	57.3	21.5	
Draw Through Fan						0.6
Duct Frictional Heat						0.7
· ·						0.0
Supply Duct Heat Gain	54.2	52.1	87.1	57.3	21.9	
Cold Deck Supply Air Supply Air	54.2	52.1	87.1	57.3	21.9	

12.19 (%) Percent Outside Air Sensible Heat Ratio (SHR) 0.859 Percent Supply Air Bypassing Coil 0.00 (%) 19,450 (Cfm) Coil Airflow

PAGE 29

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

BUILDING U-VALUES - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

BUILDING U-VALUES-----

					Room	u-Val	ues				Room	Room
		(Btu/hr/sqft/F)									Mass	Capac.
				Summr	Wintr		Summir	Wintr			(1b/	(Btu/
Room						Roof	Windo	Windo	Wall	Ceil.	sqft)	sqft/F)
Number	Description	Part.	ExFlr	Skylt	SKYIC	MOOI.						
					0.000	0.069	0.568	0.596	0.310	0.000	107.0	21.77
1	GEN MAINT BAYS	0.297	0.660	0.000		0.069	0.568	0.596	0.310	0.000	107.0	21.77
Zone	1 Total/Ave.	0.297	0.660	0.000	0.000	0.069	0.568	0.596	0.355	0.000	105.2	21.38
4	GEN MAINT BAYS	0.297	0.660	0.000	0.000		0.568	0.596	0.355	0.000	105.2	21.38
Zone	4 Total/Ave.	0.297	0.660	0.000	0.000	0.069	0.568	0.596	0.324	0.000	106.4	21.65
System	1 Total/Ave.	0.297	0.660	0.000	0.000	0.069		0.596	0.141	0.000	102.6	21.39
2	GEN MAINT SHOP	0.297	0.660	0.000	0.000	0.069	0.568	0.596	0.141	0.000	102.6	21.39
Zone	2 Total/Ave.	0.297	0.660	0.000	0.000	0.069	0.568		0.192	0.000	103.6	21.49
5	GEN MAINT SHOP	0.297	0.660	0.000	0.000	0.069	0.568	0.596		0.000	103.6	21.49
Zone	5 Total/Ave.	0.297	0.660	0.000	0.000	0.069	0.568	0.596	0.192			21.45
System	2 Total/Ave.	0.297	0.660	0.000	0.000	0.069	0.568	0.596	0.188	0.000	103.1	
3	GEN MAINT ADMIN	0.297	0.660	0.000	0.000	0.000	0.568	0.596	0.102	0.000	71.8	14.27
•	3 Total/Ave.	0.297	0.660	0.000	0.000	0.000	0.568	0.596	0.102	0.000	71.8	14.27
Zone		0.297	0.660		0.000	0.000	0.568	0.596	0.102	0.000	71.8	14.27
System	_	0.297	0.550		0.000	0.069	0.568	0.596	0.153	0.000	107.7	22.24
6	GEN MAINT ADMIN					0.069	0.568	0.596	0.153	0.000	107.7	22.24
Zone	6 Total/Ave.		0.660			0.069	0.568			0.000	107.7	22.24
System	4 Total/Ave.		0.660			0.069			0.260	0.000	103.5	21.43
Buildir	ng	0.297	0.660	0.000	0.000	0.069	0.300	0.590				

BUILDING AREAS - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

BUILDING AREAS -----

Room Number	Description	Numbe Dupli		Floor Area/Dupl Room (sqft)	Total Floor Area (sqft)	Partition Area (sqft)	Exposed Floor Area (sqft)	Skylight Area (sqft)	sk1 /Rf (%)	Net Roof Area (sqft)	Window Area (sqft)	Win /Wl (%)	Net Wall Area (sqft)
				19,255	19,255	1,030	936	0	0	19,923	3,454	14	21,926
1	-	1 1	19,255	19,255	1,030	936	0	0	19,923	3,454	14	21,926	
Zone	1 Total/Ave.		_	0.530	8,520	150	403	0	0	8,520	1,280	11	10,004
4		1	1	8,520	8,520	150	403	0	0	8,520	1,280	11	10,004
Zone	4 Total/Ave.				27,775	1,180	1,339	0	0	28,443	4,734	13	31,930
System	1 Total/Ave.			65,268	65,268	10,080	64	0	0	64,800	297	18	1,325
2		1	1	1 63,200	65,268	10,080	64	0	0	64,800	297	18	1,325
Zone	2 Total/Ave			75,060	75,060	13,536	784	0	0	73,017	4,512	23	15,524
5		1	1	75,000	75,060	13,536	784	0	0	73,017	4,512	23	15,524
Zone	5 Total/Ave				140,328	23,616	848	0	0	137,817	4,809	22	16,849
System			1	4,216	4,216	150	84	0	0	0	120		721
3		_	_	4,210	4,216	150	84	0	0	0	120		721
Zone	3 Total/Ave				4,216	150	84	0	0	0	120		
System	3 Total/Ave		1	26,557	26,557	10,800	415	O	0	24,109	568		•
6		_	•	20,337	26,557		415	c	0	24,109	568	8	-
Zone	5 Total/Ave				26,557		415	c	0	24,109	568	. 8	•
System Buildi		•			198,876	•	2,686	C	0	190,369	10,231	. 15	56,312

ASHRAE 90 ANALYSIS - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

----- ASHRAE 90 ANALYSIS-----

Overall Roof U-Value = 0.069 (Btu/Hr/Sq Ft/F)
Overall Wall U-Value = 0.307 (Btu/Hr/Sq Ft/F)
Overall Building U-Value = 0.131 (Btu/Hr/Sq Ft/F)

Roof Overall Thermal Transfer Value (OTTVr) = 3.47 (Btu/Hr/Sq Ft)
Wall Overall Thermal Transfer Value (OTTVw) = 23.29 (Btu/Hr/Sq Ft)

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

System Totals

Percent	Cool	ing Loa	d	Heati	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
						•						_
0 - 5	3.4	13	406	-601,290	3	122	16,667.0	31	2,731	946.5	0	0
5 - 10	6.8	9	278	-1,202,580	5	231	33,334.1	11	941	1,893.0	0	0
10 - 15	10.2	8	254	-1,803,870	7	319	50,001.1	0	0	2,839.5	0	o
15 - 20	13.6	12	357	-2,405,160	8	366	66,668.1	0	0	3,786.0	0	0
20 - 25	17.0	9	260	-3,006,450	11	519	83,335.2	0	0	4,732.5	0	0
25 - 30	20.4	8	232	-3,607,740	12	576	100,002.2	0	0	5,679.0	D	0
30 - 35	23.8	5	139	-4,209,031	13	591	116,669.3	0	0	6,625.5	0	0
35 - 40	27.2	7	210	-4,810,321	10	460	133,336.3	0	0	7,572.0	0	0
40 - 45	30.6	6	180	-5,411,610	7	314	150,003.3	0	0	8,518.5	0	0
45 - 50	34.0	5	152	-6,012,901	7	328	166,670.4	0	0	9,465.0	0	0
50 - 55	37.4	4	129	-6,614,191	8	380	183,337.4	0	0	10,411.5	0	0
55 - 60	40.8	6	190	-7,215,481	8	383	200,004.5	0	O	11,358.0	0	0
60 - 65	44.2	2	65	-7,816,771	1	62	216,671.5	0	0	12,304.5	0	0
65 - 70	47.6	2	65	-8,418,062	0	0	233,338.5	0	0	13,251.0	0	0
70 - 75	51.0	2	65	-9,019,352	0	0	250,005.6	0	0	14,197.5	0	0
75 - 80	54.3	1	20	-9,620,642	0	0	266,672.6	0	0	15,144.0	0	0
80 - 85	57.7	1	20	-10,221,932	0	0	283,339.7	0	0	16,090.5	0	0
85 - 90	61.1		0	-10,823,222	0	0	300,006.7	0	0	17,037.0	0	0
90 - 95	64.5	0	0	-11,424,512	0	0	316,673.7	58	5,088	17,983.5	0	0
	67.9	0	0	-12,025,802	0	0	333,340.7	0	. 0	18,930.0	100	8,760
95 - 100		_		-12,023,802	0		0.0	0	0	0.0	0	0
Hours Off	0.0	0	5,738	v	U	4,103	***	-	-			

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

Main System 1 UH UNIT HEATERS

Perce	nt	Cool	ing Loa	d	Heatin	ng Load		Cooling	Airflow		Heating	Airflow	
Desi	gn	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Lo	ad	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 -	5	0.0	0	0	-188,310	7	292	6,918.1	0	0	0.0	0	0
5 -	10	0.0	0	0	-376,620	11	474	13,836.1	0	0	0.0	0	0
10 -	15	0.0	0	0	-564,930	21	920	20,754.2	0	0	0.0	0	0
15 -	20	0.0	0	0	-753,240	20	871	27,672.2	0	0	0.0	0	0
20 -	25	0.0	0	0	-941,550	13	590	34,590.3	0	0	0.0	0	0
25 -	30	0.0	0	0	-1,129,860	13	573	41,508.3	0	0	0.0	0	0
30 -	35	0.0	0	0	-1,318,170	14	603	48,426.4	0	0	0.0	0	0
35 -	40	0.0	0	0	-1,506,480	2	104	55,344.4	0	0	0.0	0	0
40 -	45	0.0	0	0	-1,694,790	0	0	62,262.5	0	0	0.0	0	0
45 ~	50	0.0	0	0	-1,883,100	0	0	69,180.5	0	0	0.0	0	0
50 -	55	0.0	0	o	-2,071,410	0	0	76,098.6	0	0	0.0	0	0
55 -	60	0.0	0	0	-2,259,720	0	0	83,016.6	0	0	0.0	0	0
60 -	65	0.0	0	0	-2,448,030	0	0	89,934.7	0	0	0.0	0	0
65 -	70	0.0	0	0	-2,636,341	0	0	96,852.7	0	0	0.0	0	0
70 -	75	0.0	0	0	-2,824,650	0	0	103,770.8	0	0	0.0	0	0
75 -	80	0.0	0	0	-3,012,961	0	0	110,688.8	0	0	0.0	0	0
80 ~	85	0.0	0	0	-3,201,271	0	0	117,606.9	0	0	0.0	0	0
85 -	90	0.0	0	0	-3,389,580	0	0	124,524.9	0	0	0.0	0	0
90 -	95	0.0	0	0	-3,577,891	0	0	131,443.0	0	0	0.0	О	0
95 ~	100	0.0	0	0	-3,766,200	0	0	138,361.0	100	5,088	0.0	0	0
Hour	s Off	0.0	О	8,760	О	О	4,333	0.0	0	3,672	0.0	0	8,760

Main System 2 UV UNIT VENTILATOR

Percent	Cool	ling Loa	d	Heatir	ng Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(♦)		(Cfm)	(%)	
0 - 5	0.0	0	0	-389,980	2	92	8,372.5	0	0	0.0	0	0
5 - 10	0.0	0	0	-779,960	2	101	16,745.0	0	0	0.0	0	0
10 - 15	0.0	0	o	-1,169,940	5	212	25,117.5	0	0	0.0	0	0
15 - 20	0.0	0	0	-1,559,920	5	250	33,490.0	0	0	0.0	0	0
20 - 25	0.0	0	0	-1,949,900	8	362	41,862.5	0	0	0.0	0	0
25 - 30	0.0	0	0	-2,339,880	7	344	50,235.0	0	0	0.0	0	0
30 - 35	0.0	0	0	-2,729,860	10	485	58,607.5	0	0	0.0	0	0
35 - 40	0.0	0	0	-3,119,840	10	455	66,980.0	0	0	0.0	0	0
40 - 45	0.0	0	0	-3,509,820	10	464	75,352.5	0	0	0.0	0	0
45 - 50	0.0	0	0	-3,899,800	8	379	83,725.0	0	0	0.0	0	0
50 - 55	0.0	0	0	-4,289,781	7	312	92,097.5	C	0	0.0	0	0
55 - 60	0.0	0	0	-4,679,761	6	295	100,470.0	0	0	0.0	0	0
60 - 65	0.0	0	0	-5,069,741	7	309	108,842.5	0	0	0.0	0	0
65 - 70	0.0	0	0	-5,459,721	6	298	117,215.0	0	0	0.0	0	0
70 - 75	0.0	0	0	-5,849,701	6	293	125,587.5	0	0	0.0	0	0
75 - 80	0.0	0	0	-6,239,681	0	0	133,960.0	C	0	0.0	0	0
80 - 85	0.0	0	0	-6,629,661	0	0	142,332.5	0	0	0.0	0	0
85 - 90	0.0	0	0	-7,019,641	0	0	150,705.0	0	0	0.0	0	0
90 - 95	0.0	0	0	-7,409,622	0	0	159,077.5	0	0	0.0	0	0
95 - 100	0.0	0	0	-7,799,601	0	0	167,450.0	100	5,088	0.0	0	0
Hours Off	0.0	. 0	8,760	0	0	4,109	0.0	0	3,672	0.0	0	8,760

SYSTEM LOAD PROFILE - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

Main System 3 SZ SINGLE ZONE

Percent	Cool	ing Loa	đ	Heati:	ig Load		Cooling	Airflow		Heating	Airflow	
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Bours	Hours	Cap.	Hours	Hours
Load	(Ton)	(%)		(Btuh)	(%)		(Cfm)	(*)		(Cfm)	(*)	
0 - 5	0.9	24	633	-4,835	6	148	404.0	0	0	0.0	0	0
5 - 10	1.7	16	415	-9,670	6	141	808.0	0	0	0.0	0	0
10 - 15	2.6	13	339	-14,505	5	128	. 1,212.0	0	0	0.0	0	О
15 ~ 20	3.5	11	294	-19,340	11	287	1,616.0	0	0	0.0	0	0
20 - 25	4.3	14	361	-24,175	11	269	2,020.0	0	0	0.0	0	0
25 - 30	5.2	8	220	-29,010	15	374	2,424.0	0	0	0.0	0	0
30 - 35	6.0	8	211	-33,845	10	266	2,828.0	0	0	0.0	0	0
35 - 40	6.9	4	105	-38,680	15	382	3,232.0	0	0	0.0	0	0
40 - 45	7.8	2	65	-43,515	19	490	3,636.0	0	0	0.0	0	0
45 - 50	8.6	1	20	-48,350	2	62	4,040.0	O	0	0.0	0	0
50 - 55	9.5	0	0	-53,185	0	0	4,444.0	0	0	0.0	0	0
55 - 60	10.4	0	0	-58,020	0	0	4,848.0	0	0	0.0	0	O
60 - 65	11.2	0	0	-62,855	0	0	5,252.0	0	0	0.0	0	0
65 - 70	12.1	0	0	-67,690	0	0	5,656.0	0	0	0.0	0	0
70 - 75	13.0	0	0	-72,525	0	0	6,060.0	0	0	0.0	0	0
75 - 80	13.8	0	0	-77,360	0	0	6,464.0	0	0	0.0	0	0
80 - 85	14.7	0	0	-82,195	0	0	6,868.0	0	0	0.0	0	0
85 - 90	15.5	0	0	-87,030	0	0	7,272.0	0	0	0.0	0	0
90 - 95	16.4	0	0	-91,865	0	0	7,676.0	0	0	0.0	0	0
90 - 95	17.3	0	0	-96,700	0	0	8,080.0	100	8,760	0.0	0	0
95 - 100 Eours Off	0.0	0		0	0	6,213	0.0	0	0	0.0	0	8,760

Main System 4 TABVAV TERMINAL AIR BLENDER VAV

ercent	Cool	ing Loa	d	Heati	ng Load		Cooling	Airflow		Eeating		
Design	Cap.	Hours	Hours	Capacity	Hours	Hours	Cap.	Hours	Hours	Cap.	Hours	Hours
Load	(Ton)	(\$)		(Btuh)	(%)		(Cfm)	(%)		(Cfm)	(%)	
0 - 5	2.5	8	246	-18,165	6	100	972.5	9	256	946.5	0	'
5 - 10	5.1	10	291	-36,330	7	116	1,945.0	15	439	1,893.0	0	+
0 - 15	7.6	9	272	-54,495	6	104	2,917.5	10	284	2,839.5	0	
5 - 20	10.1	7	220	-72,660	15	249	3,889.9	7	208	3,786.0	0	
0 - 25	12.7	9	271	-90,825	13	226	4,862.4	12	369	4,732.5	0	
5 - 30	15.2	8	226	-108,990	10	175	5,834.9	4	132	5,679.0	0	
0 - 35	17.7	6	181	-127,155	16	273	6,807.4	4	127	6,625.5	0	
5 - 40	20.3	5	160	-145,320	22	372	7,779.9	6	165	7,572.0	0	
0 - 45	22.8	6	186	-163,485	4	73	8,752.4	2	62	8,518.5	0	
5 - 50	25.3	5	149	-181,650	0	0	9,724.9	1	40	9,465.0	0	
0 - 55	27.9	6	185	-199,815	0	0	10,697.3	2	67	10,411.5	0	
5 - 60	30.4	4	112	-217,980	ó	0	11,669.8	5	149	11,358.0	0	
0 - 65	32.9	3	102	-236,145	0	0	12,642.3	5	151	12,304.5	0	
5 - 70	35.5	5	147	-254,310	0	0	13,614.8	6	171	13,251.0	0	
0 - 75	38.0	2	65	-272,475	0	0	14,587.3	4	108	14,197.5	0	
5 - 80	40.5	2	65	-290,640	0	0	15,559.8	4	127	15,144.0	0	
0 - 85	43.1	2	65	-308,805	0	0	16,532.3	1	43	16,090.5	0	
5 - 90	45.6	1	20	-326,970	0	0	17,504.7	2	65	17,037.0	0	
0 - 95	48.1	1	20	-345,135	0	0	18,477.2	1	20	17,983.5	0	
5 - 100	50.7	0	0	-363,300	0	0	19,449.7	0	0	18,930.0	100	8,7
ours Off	0.0	0	5,777	0	0	7,072	0.0	0	5,777	0.0	0	

BUILDING TEMPERATURE PROFILES - ALTERNATIVE 1 BLDG 5265 BASERUN FT LEONARD WOOD

Day Type 1 1 1 1 3 3

				P		LDIN	G TEMPERATURE PROFILES
Temperature							Room Number
Range	1	4	2	5	3	6	
(F)							
Max. Temp.	104.9	99.9	87.0	93.0	83.9	84.6	
Mo./Hr.	7 19	8 18	7 20	8 18	4 18	4 16	
Day Type	1	1	2	1	1	2	
	• • • • •	• • • • • •	• • • • •		• • • • • •		Number of Hours
Above 100	0	0	0	0	0	0	
95 - 100	171	0	0	0	0	0	
90 - 95	514	419	0	371	0	0	
85 - 90	811	755	605	1,402	0	0	
80 - 85	942	892	1,848	1,144	222	501	
75 - 80	694	1,243	1,007	737	844	1,567	
70 - 75	867	990	612	457	7,694	6,692	
65 - 70	4,743	4,332	4,688	4,649	0	0	
60 - 65	18	129	0	0	0	0	
55 - 60	0	0	0	0	0	0	
50 - 55	0	0	0	0	0	0	
Below 50	. 0	0	0	0	0	0	
Min. Temp.	63.6	63.3	66.5	64.8	70.3	71.3	
Mo./Hr.	5 6	5 6	5 7	5 6	5 8	9 7	

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

----- EQUIPMENT ENERGY CONSUMPTION-----

						Mont	hly Cons	umption						
Ref	Equip					May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	may	June	0417	3	•				
0	LIGHTS								45710	41008	44282	41008	41422	511,329
	EFEC	42852	38751	45712	41008	44282	43869	41422	45712	172.3	172.3	172.3	172.3	172.3
	PK	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	1/2.3	1/2.3	2.0.0		
1	MISC LD									25537	27976	25537	25593	321,019
	ELEC	26785	24231	29168	25537	27976	27919	25593	29168	169.9	169.9	169.9	169.9	169.9
	PK	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	109.9	109.9	105.5		
2	MISC LD									_	0	0	0	0
	GAS	0	0	0	0	0	0	0	0	0		0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••
3	MISC LD							_	_		0	0	0	0
	OIL	0	0	0	0	0	0	0	0	0	-	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
4	MISC LD					_	_	0	0	0	0	0	0	o
	P STEAM	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
5	MISC LD				_		0	0	0	0	0	0	0	0
	P HOTH20	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0		V. 0					
6	MISC LD	_	_	o	0	0	0		o	0	0	o	0	0
	P CHILL	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0							
1	EQ10018			STG CTV	555 TONS	5 6427	10150	13350	10223	6236	0	0	0	46,385
	ELEC	0		0	0.0	30.5	40.6	45.8	38.6	31.5	0.0	0.0	0.0	45.8
	PK	0.0	0.0	0.0	0.0	30.5	40.0	45.0						
1	EQ5100			OLING TO			2056	3924	3710	2532	0	0	0	16,418
	ELEC	0			0	2994		5.5	5.5		0.0	0.0	0.0	5.5
	PK	0.0	0.0	0.0	0.0	5.5	5.5	3.3	3.3	3.3	•••			
1	EQ5100			OLING TO					51	31	o	0	0	230
	WATER	0						66 0.2	0.2			_		0.2
	PK	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2				
1	EQ5001			ILLED WA			2098	2527	2389	1630	0	0	o	10,572
	ELEC	0						3.5						3.5
	PK	0.0	0.0	0.0	0.0	3.5	3.3	3.3	5.5					
:	EQ5010		co	NDENSER	WATER PU	MP C.V.						_		11,127
	ELEC	C) 0	0	0	2029	2208	2659	2514	1716	0	0	0	11,127

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 5265 BASERUN FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.7
1	EQ5300		CONTE	ROL PANE	. & INTER	LOCK					_		0	2,983
	BLBC	0	0	0	0	544	592	713	674	460	0	0	0.0	1.0
	PK	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	2.0
1	EQ4371		FAN (COIL SUP	PLY FAN					_	4440	4297	4440	30,365
	ELEC	4440	4011	4440	4297	0	0	0	0	0	6.0	6.0	6.0	5.0
	PK	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	
2	BQ4372		UNIT	VENTILA	TOR FAN					_		52638	54392	371,974
	ELEC	54392	49129	54392	52638	0	0	0	0	0	54392 73.1	73.1	73.1	73.1
	PK	73.1	73.1	73.1	73.1	73.1	0.0	0.0	0.0	0.0	73.1	73.1	,,,,	
3	EQ4002		BI C	ENTRIF.	FAN C.V.							0550	2637	31,045
	ELEC	2637	2382	2637	2552	2637	2552	2637	2637	2552	2637	2552 3.5	3.5	3.5
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	
4	EQ4002		BIC	ENTRIF.	FAN C.V.						0	0	0	16,961
	ELEC	0	0	0	0	2920	3506	4147	3809	2579 14.7	0.0	0.0	0.0	17.0
	PK	0.0	0.0	0.0	0.0	17.0	15.6	17.0	16.0	14.7	0.0	0.0	• • • • • • • • • • • • • • • • • • • •	
4	EQ4003		FC (FAN C.V.				7014	6787	7014	6787	7014	B2,580
	ELEC	7014	6335	7014	6787	7014	6787	7014 9.4	9.4	9.4	9.4	9.4	9.4	9.4
	PK	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	5.4			
1	EQ2002				BE STEAM		0	0	0	0	16093	25724	48592	227,304
	GAS	46344	42767	36471	11314	0.0	0.0	0.0	0.0	0.0	51.3	61.1	89.4	93.2
	PK	93.2	88.8	79.5	39.8	0.0	0.0	0.0		• • • • • • • • • • • • • • • • • • • •				
1	EQ5020				CIRC. PU	np c.v.	0	o	0	D	4598	6177	6383	39,635
	ELEC	6383	5765	6383	3946	_	0.0	0.0	0.0	0.0	8.6	8.6	8.6	8.6
	PK	8.6	8.6	8.6	8.6	0.0	0.0	0.0	0.0	0.0	0.0			
1	EQ5240				ED DRAFT		_	0	0	0	5445	8659	8947	55,559
	ELEC	8947	8081	8947	5532	0	0	0.0	0.0	0.0	12.0	12.0	12.0	12.0
	PK	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	22.0			
:	1 EQ5307			LER CON		_	_	0	0	0	268	360	372	2,310
	ELEC	372		372	230	0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	***			
	1 EQ5061				RETURN P		0	0	0	0	303	407	421	2,611
	ELEC	421		421		0	0.0	0.0	0.0	0.0			0.6	0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	3.0			
	1 EQ5406			KE-UP WA			_	_	0	0	33	45	46	288
	WATER	46		46		0	0	0	0.0	0.0				0.1
	PK	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1			

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 5265 RIGHT SETBACK FT LEONARD WOOD

------MONTHLY ENERGY CONSUMPTION-----

	ELEC	DEMAND	GAS		GAS DMND
	On Peak	On Peak	On Peak	WATER	On Peak
Month	(kWh)	(kW)	(Therm)	(1000 Gl)	(Thrm/hr)
Jan	152,227	455	35,543	41	132
Feb	137,580	456	33,308	37	136
March	156,126	456	27,559	37	130
April	137,586	456	8,323	14	85
May	142,233	476	0	25	0
June	131,299	477	0	45	0
July	121,651	428	0	56	0
Aug	133,382	473	0	45	0
Sept	130,900	474	0	29	0
Oct	145,310	456	11,171	16	98
Nov	144,520	456	17,525	34	113
Dec	149,605	456	37, 9 99	41	137
Total	1,683,420	477	171,429	420	137

Building Energy Consumption = 115,089 (Btu/Sq Ft/Year)

Floor Area = 198,876 (Sq Ft)

Source Energy Consumption = 177,414 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 5265 NIGHT SETBACK FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION-----

						Mont	hlu Cong	mntion :						
Ref	Bquip						June	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug					
0	LIGHTS								45712	41008	44282	41008	41422	511,329
	RLEC	42852	38751	45712	41008	44282	43869	41422	172.3	172.3	172.3	172.3	172.3	172.3
	PK	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	112.3	1,213			
1	MISC LD									25537	27976	25537	25593	321,019
	RLEC	26785	24231	29168	25537	27976	27919	25593	29168	169.9	169.9	169.9	169.9	169.9
	PK	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	109.9	109.3	20313		
2	MISC LD								_	0	0	0	0	0
	GAS	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
3	MISC LD									_	0	0	0	0
	OIL	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	
4	MISC LD								_	0	0	0	0	0
	P STEAM	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD									0	0	0	0	0
	P HOTH20	0		0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
6	MISC LD									0	0	0	0	0
	P CHILL	0			0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	EQ10018		2-1		<555 TON					£407	0	0	o	38,228
	ELEC	0					8560	10591	8544		0.0	0.0	0.0	45.8
	PK	0.0	0.0	0.0	0.0	30.5	40.6	45.8	39.6	31.5	0.0	0.0		
:	EQ5100			OLING TO			****	2218	2174	1926	0	o	o	10,441
	ELEC	O					2102 5.5	5.5						5.5
	PK	0.0	0.0	0.0	0.0	5.5	5.5	5.5	5.5	3.3	•••			
	1 EQ5100			OLING TO			46	56	46	i 29	o	. 0	0	202
	WATER	C						0.2						0.2
	PK	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2		• • • • • • • • • • • • • • • • • • • •			
	1 EQ5001				TER PUME		1354	1428	1400	1240	, () 0	. 0	6,723
	ELEC	(3.5					0.0	3.5
	PK	0.0	0.0	0.6	0.0	, 3.5	3.5	3.5						
	1 EQ5010				WATER P		1405	1503	1473	3 1306	; r) () 0	7,076
	RLEC		0 (0 1	0 (1369	1425	1503	14/3	, 1300	,	•	-	•

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2
BLDG 5265 NIGHT SETEACK FT LEONARD WOOD

	5205												0.0	3.7
	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.7
1	EQ5300		CONT	ROL PANE						350	0	0	0	1,897
	ELEC	0	0	0	0	367	382	403	395	350	0.0	0.0	0.0	1.0
	PK	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	•••	
1	EQ4371		FAN	COIL SUP				_		0	4440	4297	4440	30,365
	ELEC	4440	4011	4440	4297	0	. 0	. 0	0	0.0	5.0	6.0	6.0	6.0
	PK	6.0	6.0	6.0	6.0	0.0	. 0.0	0.0	0.0	0.0	0.0	•••	- "	
2	EQ4372		UNIT	VENTIL!	TOR FAN					42187	54392	52638	54392	550,717
	ELEC	54392	49129	54392	52638	47450	32966	24930	31210	73.1	73.1	73.1	73.1	73.1
	PK	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1		
3	EQ4002		BI (CENTRIF.	FAN C.V.							2552	2637	31,045
	ELEC	2637	2382	2637	2552	2637	2552	2637	2637	2552	2637	3.5	3.5	3.5
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	
4	E04002		BI	CENTRIF.	FAN C.V								_	16,241
•	ELEC	0	0	0	0	2771	3383	3912	3655	2519	0	0	0	17.0
	PK	0.0	0.0	0.0	0.0	17.0	15.6	17.0	17.0	14.7	0.0	0.0	0.0	17.0
4	EQ4003		FC	CENTRIF.	FAN C.V									
•	ELEC	7014	6335	7014	6787	7014	6787	7014	7014	6787	7014	6787	7014	82,580
	PK	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
1	EQ2002		GAS	FIRE TU	BE STEAM									171,429
	GAS	35543	33308	27559	8323	0	0	0	0	0	11171	17525	37999	171,429
	PK	132.2	135.7	130.3	84.5	0.0	0.0	0.0	0.0	0.0	97.6	113.1	137.2	131.2
1	EQ5020		HEA	T WATER	CIRC. PU	MP C.V.							5585	29,992
	ELEC	5585	5044	5053	1887	0	0	0	0	0	2205	4633	8.6	8.6
	PK	8.6	8.6	8.6	8.6	0.0	0.0	0.0	0.0	0.0	8.5	8.6	8.6	6.0
1	EQ5240		воз	LER FOR	ED DRAFT	FAN						***	7829	42,042
	ELEC	7829	7071	7083	2546	0	0	0	0	0	3091	6494	12.0	12.0
	PK	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	12.0	12.0	12.0	****
3	EQ5307		BO	ILER CON	TROLS								326	1,748
	ELEC	326	294	294	110	0	0	0	0	0	128	270		0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.3
1	L EQ5061		CO	NDENSATE	RETURN I	PUMP								1,976
	ELEC	368	332	333	124	0	0	0				305	368	0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.0
:	L EQ5406		MA	KE-UP WA	TER								41	218
	WATER	41	37	37	14	0							41 0.1	0.1
	PK	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 3 BLDG 5265 DDC CONTROL FT LEONARD WOOD

	ELEC	DEMAND	GAS		GAS DMIND
	On Peak	On Peak	On Peak	WATER	On Peak
Month	(kWh)	(kW)	(Therm)	(1000 G1)	(Thrm/hr)
Jan	152,227	456	33,163	41	123
Feb	137,580	456	31,138	37	128
March	156,126	456	25,055	37	120
April	136,936	456	6,738	12	75
May	145,273	480	0	15	0
June	140,458	477	0	32	О
July	132,911	479	0	43	0
Aug	142,390	477	0	33	0
Sept	135,484	476	0	18	0
Oct	145,639	456	9,541	14	88
Nov	144,520	456	15,253	34	99
Dec	149,605	456	35,594	41	129
Total	1,719,149	480	156,481	356	129

Building Energy Consumption = Source Energy Consumption = 108,186 (Btu/Sq Ft/Year)

171,342 (Btu/Sq Ft/Year)

198,876 (Sq Ft)

Floor Area =

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3
BLDG 5265 DDC CONTROL FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION-----

f	Equip -					Mont	hly Cons					Nov	Dec	Total
10	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	NOV	Dec	10041
0	LIGHTS						43050	41422	45712	41008	44282	41008	41422	511,329
	ELEC	42852	38751	45712	41008	44282	43869 172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3
	PK	172.3	172.3	172.3	172.3	172.3	172.3	1/2.3	1,2.3					
1	MISC LD						27919	25593	29168	25537	27976	25537	25593	321,019
	ELEC	26785	24231	29168	25537	27976 169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9
	PK	169.9	169.9	169.9	169.9	169.9	109.9	109.9	20000					
2	MISC LD						0	0	0	0	0	0	0	0
	GAS	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	-				
3	MISC LD				_	•	0	0	0	0	0	0	0	0
	OIL	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
4	MISC LD			_	0	o	0	0	o	0	0	0	0	c
	P STEAM	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	•••						
5	MISC LD	_	0	0	0	0	0	0	0	0	0	0	0	c
	P HOTH20 PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD		0	0	o	0	0	0	0	0	0	0	0	(
	P CHILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
_			2_6	ምር ርሞህ ፡	<555 TONS									
1	EQ1001S ELEC	0	0	0	0	3177	6377	8197	6394	3593	0	0	0	27,73
	PK	0.0	0.0	0.0	0.0	26.0	35.2	40.0	33.3	26.9	0.0	0.0	0.0	40.
1	E05100		coo	LING TO	WER									
	ELEC	0	0	0	٥	1409	1904	2097	2042	1376	0	0	0	8,82 5.
	PK	0.0	0.0	0.0	0.0	5.5	5.5	5.5	5.5	5.5	0.0	0.0	0.0	٥.
1	. EQ5100		co	OLING TO							0	0	0	14
	WATER	0		0				43		18 0.1	0.0			0.
	PK	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.0	0.0		
1	EQ5001				TER PUMP			4350	1315	886	0	. 0	0	5,68
	ELEC	0						1350 3.5						3.
	PK	0.0	0.0	0.0	0.0	3.5	3.5	3.5	3.5	3.3				
:	1 EQ5010				WATER PU					932	0	, 0	. 0	5,98
	ELEC	d	0) 0	955	1291	1421	1384	932	U		. •	-,

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 3
BLDG 5265 DDC CONTROL FT LEONARD WOOD

0000	5255													
	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.7
1	EQ5300		CONT	ROL PANE	L & INTE						0	0	0	1,604
	BLEC	0	0	0	D	256	346	381	371	250	0.0	0.0	0.0	1.0
	PK	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	
1	EQ4371		FAN	COIL SUP			_		o	0	4440	4297	4440	30,365
	ELEC	4440	4011	4440	4297	0	0	0	0.0	0.0	6.0	6.0	6.0	6.0
	PK	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0			
2	EQ4372		UNIT	VENTIL!					43247	50595	54392	52638	54392	604,912
	EFEC	54392	49129	54392	52638	54392	45332	39371	73.1	73.1	73.1	73.1	73.1	73.1
	PK	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1	,,,,,			
3	EQ4002		ві	ENTRIF.	FAN C.V.				0677	2552	2637	2552	2637	31,045
	ELEC	2637	2382	2637	2552	2637	2552	2637	2637 3.5	3.5	3.5	3.5	3.5	3.5
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.5			
4	EQ4002		BI (FAN C.V					1967	0	0	0	13,625
	BLEC	0	0	0	0	2268	2854	3428	3107	14.5	0.0	0.0	0.0	17.0
	PK	0.0	0.0	0.0	0.0	14.6	15.7	17.0	15.9	14.5	0.0	0.0	•110	
4	EQ4003		FC	CENTRIF.	FAN C.V				7014	6787	7014	6787	7014	82,580
	ELEC	7014	6335	7014	6787	7014	6787	7014	9.4	9.4	9.4	9.4	9.4	9.4
	PK	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	3.4	3.4			
1	EQ2002				JBE STEAM			0	0	0	9541	15253	35594	156,481
	GAS	33163	31138	25055	6738	0	0	0.0	0.0	0.0	88.4	99.1	129.4	129.4
	PK	123.3	127.7	120.2	75.3	0.0	0.0	0.0	0.0	0.0	0011			
1	EQ5020		HEA		CIRC. PU			_	•	0	1939	4633	5585	29,469
	ELEC	5585	5044	5053	1630	0	0	0	0.0	0.0	8.6	8.6	8.6	8.6
	PK	8.6	8.6	8.6	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
1	1 EQ5240		во		CED DRAF				0	0	2718	6494	7829	41,309
	EFEC	7829		7083		0	0	0				12.0	12.0	12.0
	PK	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	12.0	12.0		
	1 EQ5307		во	ILER CON				_	0	0	113	270	326	1,718
	ELEC	326	294						-				0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	
	1 EQ5051		co		RETURN) O	128	305	368	1,942
	ELEC	368												0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	, 0.0	, 0.6	. 0.0	2.0	
	1 EQ5406		MA	KE-UP W			. =) (o () 14	. 34	41	214
	WATER	41									-			0.1
	PK	0.1	0.1	0.:	1 0.1	0.0	0.0	0.0	, 0.0	, 0.0	, 0.1			

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 5265 ECONOMIZER FT LEONARD WOOD

MONTHLY ENERGY CONSUMPTION-----

	ELEC	DEMAND	GA.S		GAS DMND
	On Peak	On Peak	On Peak	WATER	On Peak
Month	(kWh)	(kW)	(Therm)	(1000 Gl)	(Thrm/hr)
Jan	152,227	456	33,163	41	123
Feb	137,580	456	31,138	37	128
March	156,126	456	25,055	37	120
April	136,936	456	6,738	12	75
May	145,134	480	0	14	0
June	140,308	477	0	31	0
July	132,830	479	0	42	0
Aug	142,204	477	0	32	0
Sept	135,301	476	0	17	0
Oct	145,639	456	9,541	14	88
Nov	144,520	456	15,253	34	99
Dec	149,605	456	35,594	41	129
Total	1,718,411	480	156,481	350	129

Building Energy Consumption = 108,173 (Btu/Sq Ft/Year)

Floor Area = 198,876 (Sq Ft)

Source Energy Consumption = 171,304 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4
BLDG 5265 ECONOMIZER FT LEONARD WOOD

------ EQUIPMENT ENERGY CONSUMPTION ------

Ref	Equip -					Mont	hly Cons	umption						
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS												41422	511,329
	BLEC	42852	38751	45712	41008	44282	43869	41422	45712	41008	44282 172.3	41008 172.3	172.3	172.3
	PK	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	1/2.3	1/2.3	1/2.5	2,0,0
1	MISC LD									05522	27976	25537	25593	321,019
	ELEC	26785	24231	29168	25537	27976	27919	25593	29168	25537 169.9	169.9	169.9	169.9	169.9
	PK	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	103.3	109.9	103.5	20000	
2	MISC LD									0	0	0	0	0
	GAS	0	0	0	D	0	0	0	0		0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	MISC LD								_	0	0	0	0	0
	OIL	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	MISC LD								_	0	0	0	0	0
	P STEAM	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	
5	MISC LD									0	0	0	0	0
	P HOTH20	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • •
6	MISC LD							_	_	0	0	o	o	0
	P CHILL	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	EQ1001S				<555 TON				6208	3410	0	0	0	26,999
	ELEC	0		0	0	3038	6227	8116 40.0	33.3	26.9	0.0	0.0	0.0	40.0
	PK	0.0	0.0	0.0	0.0	26.0	35.2	40.0	33.3	20.9	0.0	0.0		
1	EQ5100			OLING TO			4004	2097	2042	1376	0	0	0	8,828
	RLEC	0				1409	1904	5.5	5.5	5.5	0.0			5.5
	PK	0.0	0.0	0.0	0.0	5.5	5.5	5.5	5.5	5.5	0.0	0.0	•••	
1	EQ5100			OLING TO				42	32	17	o	o	0	136
	WATER	0												0.2
	PK	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.0	••		
1	EQ5001				TER PUMP		• • • •	1250	1315	886	0	. 0	0	5,685
	ELEC	0				-								3.5
	PK	0.0	0.0	0.0	0.0	3.5	3.5	3.5	3.5	3.3	0.0	0.0		
:	1 EQ5010				WATER PU				4964	932	c	, 0	0	5,983
	ELEC	c	, ,	, ,) 0	955	1291	1421	1384	932			. •	2,303

By: Trane Customer Direct Service Network

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 4 BLDG 5265 ECONOMIZER FT LEONARD WOOD

BLDG	5265 ECO	NOMIZER	FT LEONA	TO WOOD										
	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.7
1	EQ5300		CONT	ROL PANE	EL & INTE	RLOCK						_	0	1,604
	ELEC	0	0	0	С	256	346	381	371	250	0	0.0	0.0	1.0
	PK	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.0
1	EQ4371		FAN	COIL SU					o	0	4440	4297	4440	30,365
	RLEC	4440	4011	4440	4297	0	. 0	0	0.0	0.0	6.0	6.0	6.0	6.0
	PK	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0			
2	EQ4372				ator fan			39371	43247	50595	54392	52638	54392	604,912
	RLEC	54392	49129	54392	52638	54392	45332	73.1	73.1	73.1	73.1	73.1	73.1	73.1
	PK	73.1	73.1	73.1	73.1	73.1	73.1	/3.1	/3.1	,,,,	,			
3	EQ4002		BI		FAN C.V.				2637	2552	2637	2552	2637	31,045
	ELEC	2637	2382	2637	2552	2637	2552	2637		3.5	3.5	3.5	3.5	3.5
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.7	3.5	• • • • • • • • • • • • • • • • • • • •	
4	EQ4002		BI		FAN C.V					1067	0	0	0	13,625
	ELEC	0	0	0	0	2268	2854	3428	3107	1967 14.5	0.0	0.0	0.0	17.0
	PK	0.0	0.0	0.0	0.0	14.6	15.7	17.0	15.9	14.5	0.0	0.0	•••	
4	EQ4003		FC	CENTRIF.	FAN C.V					6787	7014	6787	7014	82,580
	ELEC	7014	6335	7014	6787	7014	6787	7014	7014 9.4	9.4	9.4	9.4	9.4	9.4
	PK	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	3.4	J		
1	EQ2002		GAS		JBE STEAM				0	0	9541	15253	35594	156,481
	GAS	33163		25055	6738	0	0	0.0	0.0	0.0	86.4	99.1	129.4	129.4
	PK	123.3	127.7	120.2	75.3	0.0	0.0	0.0	0.0	0.0	00.4			
1	EQ5020				CIRC. PU			_	0	0	1939	4633	5585	29,469
	ELEC	5585		5053	1630	0	0	0	0.0	0.0	8.6	8.6	8.6	8.6
	PK	8.6	8.6	8.6	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
1	EQ5240				CED DRAFT		_	_	0	0	2718	6494	7829	41,309
	EFEC	7829		7083		0	0	0.0	0.0	0.0	12.0	12.0	12.0	12.0
	PK	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	12.0	12.0		
1	EQ5307			ILER CON				_	0	0	113	270	326	1,718
	ELEC	326				0		0.0		0.0		0.5	0.5	0.5
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	***		
1	EQ5061				RETURN !			_	0	0	128	305	368	1,942
	ELEC	368											0.6	0.6
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	2.0	*	
1	EQ5406			KE-UP WA			_	_	•	0	14	34	41	214
	WATER	4:											0.1	0.1
	PK	0.:	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1		*	

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 5265 OA NIGHTIME FT LEONARD WOOD

	ELEC	DEMAND	GAS		GAS DMND
	On Peak	On Peak	On Peak	WATER	On Peak
Month	(kWh)	(kW)	(Therm)	(1000 G1)	(Thrm/hr)
Jan	154,242	456	11,704	46	33
Feb	139,400	456	10,331	42	31
March	158,987	456	8,220	45	27
April	140,187	456	1,902	21	11
May	98,318	411	0	28	0
June	102,245	422	0	46	0
July	102,925	428	0	56	0
Aug	107,260	420	0	47	0
Sept	90,772	412	0	30	0
Oct	148,326	456	2,066	22	13
Nov	145,604	456	5,006	37	18
Dec	151,621	456	12,618	46	32
Total	1,539,887	456	51,847	467	33

Building Energy Consumption = 52,497 (Btu/Sq Ft/Year)

Floor Area = 198,876 (Sq Ft)

Source Energy Consumption = 106,730 (Btu/Sq Ft/Year)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG 5265 OA NIGHTIME FT LEONARD WOOD

EQUIPMENT ENERGY CONSUMPTION-----

						Mont	hlv Cons	umotion						
	Equip Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Num	Code	Jan	res			-								
0	LICHTS												41422	511,329
	ELEC	42852	38751	45712	41008	44282	43869	41422	45712	41008	44282 172.3	41008 172.3	172.3	172.3
	PK	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	1/2.3	1/2.3	1,1,5	
1	MISC LD													
•	ELEC ED	26785	24231	29168	25537	27976	27919	25593	29168	25537	27976	25537	25593	321,019 169.9
	PK	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	703.3
2	MISC LD													_
-	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
3	OIL OIL	0	О	0	O	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD		0	0	o	0	0	0	0	0	0	0	0	0
	P STEAM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	•••	•••								
5	MISC LD			_		•	0	o	0	0	0	0	О	0
	P HOTH20		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•••	•				
6	MISC LD				_		o	0	0	0	0	0	0	0
	b CHITT	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
1	EQ1001S		2-5		<555 TONS						0	0	o	42,914
	ELEC	0		0	0	5994	9456	11857	9634	5972 31.5	0.0	0.0	0.0	45.8
	PK	0.0	0.0	0.0	0.0	30.5	40.5	45.8	38.6	31.5	0.0	0.0	0.0	
1	EQ5100		co	OLING TO	WER						_		0	16,588
	ELEC	0	0	0	0	2994	3258	4095	3710	2532	0	0.0		5.5
	PK	0.0	0.0	0.0	0.0	5.5	5.5	5.5	5.5	5.5	0.0	0.0	0.0	3.3
1	EQ5100		co	OLING TO	WER		•					_		208
	WATER	0	0	0	0	28	46	56	47		0			0.2
	PK	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	V.2
1	EQ5001		CH	ILLED WA	TER PUMP	c.v.							_	
	ELEC	0	0	0	О	1928	2098	2637	2389					10,682 3.5
	PK	0.0	0.0	0.0	0.0	3.5	3.5	3.5	3.5	3.5	0.0	0.0	0.0	3.3
:	L EQ5010		co	NDENSER	WATER PU	œ c.v.								
•	ELEC	o				2029	2208	2775	2514	1716	0	0	0	11,242

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1 BLDG 5265 OA NIGHTIME FT LEONARD WOOD

			0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.7
	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.,	3.,	J.,	•••			
1	EQ5300		CONT	ROL PANE										
	BLEC	0	0	0	0	544	592	744	674	450	0	0	0.0	3,014 1.0
	PK	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.0
1	EQ4371		FAN	COIL SUP										20.255
	ELEC	4440	4011	4440	4297	0	. 0	0	0	0	4440	4297	4440 6.0	30,365 6.0
	PK	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	0.0
2	EQ4372		UNIT	VENTILA	TOR FAN									
	ELEC	54392	49129	54392	52638	0	0	. 0	0	0	54392	52638	54392	371,974
	PK	73.1	73.1	73.1	73.1	0.0	0.0	0.0	0.0	0.0	73.1	73.1	73.1	73.1
3	EQ4002		BIC	CENTRIF.	FAN C.V.									
	BLEC	2637	2382	2637	2552	2637	2552	2637	2637	2552	2637	2552	2637	31,045
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
4	EQ4002		BI (CENTRIF.	FAN C.V.									
	ELEC	0	0	0	0	2920	3506	4152	3809	2579	0	0	0	16,966
	PK	0.0	0.0	0.0	0.0	17.0	15.6	17.0	16.0	14.7	0.0	0.0	0.0	17.0
4	EQ4003		FC (CENTRIF.	FAN C.V.									
	ELEC	7014	6335	7014	6787	7014	6787	7014	7014	6787	7014	6787	7014	82,580
	PK	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
1	EQ2002		GAS	FIRE TU	BE STEAM									
	GAS	11704	10331	8220	1902	0	0	0	0	0	2066	5006	12618	51,847
	PK	32.9	31.3	27.5	11.2	0.0	0.0	0.0	0.0	0.0	13.2	17.7	31.5	32.9
1	EQ5020		HEA	T WATER	CIRC. PU	Φ C.V.								
	ELEC	6383	5765	6185	2917	0	0	0	0	0	3003	5062	6383	35,697
	PK	8.6	8.6	8.6	8.6	0.0	0.0	0.0	0.0	0.0	8.6	8.6	8.6	8.6
1	EQ5240		BOI	LER FORC	ED DRAFT	FAN								
	ELEC	8947	8081	8671	4089	0	0	0	0	0	4209	7095	8947	50,039
	PK	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	12.0	12.0	12.0	12.0
1	EQ5307		BOI	LER CONT	ROLS									
	ELEC	372	336	360	170	0	0	0	О	0	175	295	372	2,081
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
1	EQ5061		CO	NDENSATE	RETURN P	UMP								
	BLEC	421	380	408	192	0	. 0	0	0	0	198	333	421	2,352
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6
1	EQ5406		MAI	KE-UP WAT	ÆR									
	WATER	46	42	45	21	0	O	0	0	0	22		46	259
	PK	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1

MONTELY ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 5265 OA DAYTIME FT LEONARD WOOD

MONTELY ENERGY CONSUMPTION-----

	ELEC	DEMAND	GAS		GAS DMND
	On Peak	On Peak	On Peak	WATER	On Peak
Month	(kWh)	(kW)	(Therm)	(1000 G1)	(Thrm/hr)
Jan	154,242	456	11,819	46	33
Feb	139,400	456	10,425	42	32
March	158,987	456	8,289	45	28
April	140,187	456	1,903	21	11
May	97,895	407	. 0	28	0
June	101,630	41.2	0	43	0
July	101,984	415	0	54	0
Aug	106,679	411	0	44	0
Sept	90,485	407	0	28	0
Oct	148,326	455	2,077	22	13
Nov	145,604	456	5,055	37	18
Dec	151,621	456	12,726	46	32
Total	1,537,039	456	52,294	456	33

Building Energy Consumption = 52,672 (Btu/Sq Ft/Year)

Floor Arma = 198,876 (Sq Ft)

Source Energy Consumption = 106,820 (Btu/Sq Ft/Year)

V 600 PAGE 5

e Service Services

177

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 5265 OA DAYTIME FT LEONARD WOOD

	Equip -					Mont								
	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS													511,329
	ELEC	42852	38751	45712	41008	44282	43869	41422	45712	41008	44232	41008	41422	172.3
	PK	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	172.3	. 1/2.3
1	MISC LD										27976	25537	25593	321,019
	BLEC	26785	24231	29168	25537	27976	27919	25593	29168	25537	169.9	169.9	169.9	169.9
	PK	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	169.9	103.9	109.9	103.3	
2	MISC LD								•	0	o	. 0	0	: 0
	GAS	0	0	0	0	O	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**	
3	MISC LD						_	_		o	0	0	o	. 0
	OIL	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
4	MISC LD					_		0	0	O	0	0	0	. `
	P STEAM	0	D	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5	MISC LD					_	_	0	0	0	0	0	0	0
	P HOTH20	0	0	0	0	0	0	-	0.0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	• • • • • • • • • • • • • • • • • • • •	
6	MISC LD							_	_	0	0	0	0	0
	P CHILL	0	. 0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	•
1	EQ1001S			STG CTV						5693	0	0	0	40,977
	ELEC	0		0	0		8852	11360	9065 29.3	25.9	0.0	0.0	0.0	32.8
	PK	0.0	0.0	0.0	0.0	25.6	29.9	32.8	29.3	23.9	0.0	0.0	0.0	
1	EQ5100			DLING TO				3924	3710	2532	0	o	0	16,247
	ELEC	0		0	0		3258	5.5	5.5	5.5	0.0	0.0	0.0	5.1
	PK	0.0	0.0	0.0	0.0	5.5	5.5	5.5	5.5	5.5	0.0	0.0	•••	
1	EQ5100			OLING TO				54	44	28	0	0	0	19'
	WATER	0			0						0.0			0.
	PK	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	-
1	EQ5001			ILLED WA						1530	•	0	0	10,46
	BLEC	0			0				2389		0.0			3.
	PK	0.0	0.0	0.0	0.0	3.5	3.5	3.5	3.5	3.5	0.0	0.0	3.0	3.:
1	EQ5010			NDENSER							_	_	•	11 01
	BLEC	c c	0	0	0	1913	2208	2659	2514	1716	0	0	0	11,011

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 2 BLDG 5265 OA DAYTIME FT LEONARD WOOD

	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.7
	PK	0.0	0.0	0.0	0.0	3.7	3.7	3.7	3.7	3.7	0.0	0.0	0.0	3.,
1	EQ5300		CON	TROL PANI	EL & INTE	RLOCK								
	ELEC	0	0	0	0	513	592	713	674	460	О	0	0	2,952
	PK	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.0
1	EQ4371		FAN	COIL SUI	PPLY FAN									
	ELEC	4440	4011	4440	4297	0	0	0	0	0	4440	4297	4440	30,365
	PK	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0
2	EQ4372		UNI	r VENTIL	ator fan									
	ELEC	54392	49129	54392	52638	0	0	0	0	0	54392	52638	54392	371,974
	PK	73.1	73.1	73.1	73.1	0.0	0.0	0.0	0.0	0.0	73.1	73.1	73.1	73.1
3	EQ4002		BI	CENTRIF.	FAN C.V.									
	ELEC	2637	2382	2637	2552	2637	2552	2637	2637	2552	2637	2552	2637	31,045
	PK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
4	EQ4002		BI (CENTRIF.	FAN C.V.									
	ELEC	0	0	0	0	2911	3495	4134	3798	2571	0	0	0	16,909
	PK	0.0	0.0	0.0	0.0	17.0	15.6	17.0	16.0	14.6	0.0	0.0	0.0	17.0
4	EQ4003		FC (CENTRIF.	FAN C.V.									
	ELEC	7014	6335	7014	6787	7014	6787	7014	7014	6787	7014	6787	7014	82,580
	PK	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
1	EQ2002		GAS	FIRE TU	BE STEAM									
	GAS	11819	10425	8289	1903	0	0	0	0	0	2077	5055	12726	52,294
	PK	33.4	31.8	27.9	11.2	0.0	0.0	0.0	0.0	0.0	13.5	17.7	32.1	33.4
1	EQ5020		HEA'	T WATER	CIRC. PUP	œ c.v.								
	ELEC	6383	5765	6185	2917	0	0	0	0	0	3003	5062	6383	35,697
	PK	8.6	8.6	8.6	8.6	0.0	0.0	0.0	0.0	0.0	8.5	8.6	8.5	8.6
1	EQ5240		BOI	LER FORC	ED DRAFT	FAN								
	ELEC	8947	8081	8671	4089	0	0	0	0	0	4209	7095	8947	50,039
	PK	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	12.0	12.0	12.0	12.0
1	EQ5307		BOI	LER CONT	ROLS									
	ELEC	372	336	360	170	0	0	0	0	0	175	295	372	2,081
	PK	0.5	0,5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
1	BQ5061		CON	DENSATE	RETURN P	JMP								
	ELEC	421	380	408	192	0	0	0	0	0	198	333	421	2,352
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6
1	BQ5406		MAK	E-UP WAT	ER									
	WATER	46	42	45	21	0	0	0	0	0	22	37	46	259
	PK	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1

DEPARTMENT OF THE ARMY

CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS P.O. BOX 9005 CHAMPAIGN, ILLINOIS 61826-9005

REPLY TO ATTENTION OF:

TR-I Library

17 Sep 1997

Based on SOW, these Energy Studies are unclassified/unlimited. Distribution A. Approved for public release.

Marie Wakeffeld, Librarian Engineering